



Collaborating to Overcome Challenges:

Over-molded Bradley Fighting Vehicle Cable Assembly

A Case Study

Background

It wouldn't be unreasonable to think that a brake light cable would be a relatively straight forward assembly to build and install. But in a demanding military application where a watertight seal must be maintained, there are a number of challenges that must be overcome.

This case study illustrates how Liberty Engineers worked with [General Dynamics](#) to create a reliable and accurate final product without increasing cost or lead time.



Problem

In this case, the bulkhead fitting proved problematic in a number of ways. There was a high fallout rate at installation into the vehicle. The bulkhead fitting was prone to cross-threading. This, combined with the torque tooling, caused the threads to be destroyed and resulted in the assembly being scrapped.

Even before vehicle assembly, the relatively heavy steel bulkhead fitting could easily damage the lighter, less robust components during shipping and handling and even in installation. This also included the connectors, since they are constructed from a softer material and had plating that could be damaged.

Finally, to achieve the water-tight seal, the assembly had to be potted to secure the cable to the bulkhead fitting; each connector also needed to be over-molded. There is no margin for error in this type of assembly. Rework is not an option.





Solution



Liberty engineers were able to work with [General Dynamics](#) and with the supplier of the bulkhead fitting to change the thread specifications to almost entirely eliminate the cross-threading issues. We developed packaging and procedures to prevent damage during shipping and handling. Our standard practice of fixturing to poka-yoke the assembly process prevented the cost and delivery problems associated with scrapping molded assemblies.

Having a collaborative customer like [General Dynamics](#) made all the difference in this case. The result was a win-win for all involved.



Liberty Electronics provides electrical cable assemblies, wire harnesses, and box builds for demanding defense and commercial OEM's looking to grow their business by teaming with a competent outsourcing partner committed to success.

Company Overview

- Incorporated in 1985
- ISO 9001, AS9100, Nadcap Registered Quality Systems
- ITAR Compliant
- 300 Employees – Non-Union Workforce
- 150,000 Sq Ft Total
- 34% Employee Owned
- Profit Sharing System
- Lean Manufacturing Processes



Wired for People.

Our belief in the value of people throughout the procurement and production process means building quality relationships also results in the best quality products.



Wired for Life.

Our products are made knowing that a life depends on them to perform, which fuels a strong commitment to both the integrity of our products and how we do business.



Wired for Challenges.

Our years of proven competence in solving complex challenges makes us a true consultative partner, not just another contract manufacturer.



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