



Innovative Technology and Product Development

Compact Swaging Machine

A Case Study

Challenge

Aircraft carriers use a series of "arresting" and "purchase" cables to stop planes that are landing on the deck. After many arrested landings, the terminals on the ends of the purchase cables must be replaced. The current process — called spltering — applies molten metal as the attachment method and is labor intensive, dangerous, and time consuming (it can take up to 12 hours to replace one purchase cable terminal). A preferred process is swaging (similar to crimping) the terminal onto the cable, but available swaging machines were too large and heavy for below-deck shipboard use.

Creare Solution

Creare developed a compact swaging machine (CSM) for the US Navy to replace the spltering process. The CSM is much smaller and lighter than existing swaging machines, enabling its below-deck use aboard aircraft carriers. The CSM is designed to reduce workload and dramatically increase the quality of life for sailors. The machine allows one sailor to accomplish in less than an hour what used to require multiple sailors up to 12 hours.

Working with the Navy, we designed, built, and tested a prototype machine and a new purchase cable swaged terminal. Creare qualified the CSM by completing numerous laboratory tests, environmental qualification tests, and land-based trials. During development, terminals attached using the CSM have also been used for live aircraft arrestments on two US Navy aircraft carriers and now the CSM is being installed on the entire US aircraft carrier fleet.



An F-35C Lightning II makes an arrested landing (US Navy photo/Released)



Flight deck sailors attach a new arresting cable to the arresting gear assembly (US Navy photo by Andre Rhoden / Released)



Creare's Compact Swaging Machine (CSM)

The CSM is "the single biggest Quality of Life improvement in 20 years of V-2."

Naval Air Systems Command

Compact Swaging Machine

Impact

The Naval Air Systems Command estimates that Creare's CSM will reduce V-2 workload requirements by up to 500 man-hours per deployment. (V-2 is the Navy division responsible for safely launching and recovering aircraft aboard aircraft carriers.) Creare worked with its manufacturing partner, Edare Inc., to build and deliver the first six CSMs for the US carrier fleet in 2018. Creare and Edare will build six more units in 2019. Ultimately, a total of 28 CSMs will be fabricated and delivered to the US Navy.

About Creare

Founded in 1961, Creare LLC is an innovative technology and product development company located in Hanover, New Hampshire. We serve government and industrial clients with engineering R&D services that include analysis, prototype design, fabrication, and testing. Our clients include large and small companies and government agencies in the aerospace, defense, medical, energy, and process industries. Creare means "to create" – we create value for our clients when we solve their most difficult problems. We also help integrate new technologies into their products, systems, and processes.



Sailors use CSM for the first time on the flight deck of the aircraft carrier USS Ronald Reagan (US Navy photo by Ruben Reed)



The CSM production team



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