

# Lightening the Load

## Cortland streamlines U.S. Army helicopter recovery kits

### The Challenge

Cortland was approached by Kaman Aerospace who had been presented with a new U.S. military project; to design and build a Unit Maintenance Aerial Recovery Kit (UMARK) to replace the U.S. Army's aging Aerial Recovery Kit (ARK).

The UMARK equipment, like its predecessor ARK, is used to provide aerial recovery capability for Army helicopters. However the kit needed to be smaller and lighter to free-up lift capacity for other cargo. It also needed to be simple enough for it to be deployed by minimal personnel.

Cortland's reputation for designing and building project-specific high strength fiber solutions ensured the company was Kaman Aerospace's first port of call for the job.

### The Solution

Cortland had previously designed and built a tethered hover for the Naval Air Test Center (NATC), a vital piece of equipment used for studying downwash from a helicopter; therefore understood Kaman's needs and challenges when it came to the need for lightweight, high specific strength rope; yet flexible enough to be stored in a small space.

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### Project

Design and build a strong, lightweight, yet flexible, helicopter recovery sling

### Location

Connecticut, USA

### Technologies used

- Unique round sling design or configuration
- Unique braiding technique
- Extensive knowledge of HMPE fiber

*"Cortland's sling expertise helped the design team successfully meet the UMARK's stringent weight, packaging and handling requirements for the U.S. Army. The UMARK continues in field use today serving the warfighter."*

**Cliff Gunsallus**  
Vice President Engineering  
Kaman Aerospace

Cortland International operates the world's largest synthetic rope manufacturing organization with capacity to produce over 70,000 metric tons of rope and netting solutions per year. Collaborating with customers, our team uses its experience in high-performance materials and market knowledge to transform ideas into proven products.  
[cortlandinternational.com](http://cortlandinternational.com)

Cortland delivered a new kit with 27 parts in total including 3 pendants. Testing and tension cycling proved strength levels that surprised both Kaman and those commissioning the project from the army.

As with the tethered hover, the main test facing the team delivering the UMARK was lift capacity, flexibility, yet meeting the desired small diameter of the load pins for reduced weight reduction.

The Army's existing recovery kit was made from polyester and weighed several hundred pounds. Cortland's new solution brought the kit weight down to less than 100 lbs.

After submitting its proposal, Cortland was tasked with a small development project, from which an early prototype kit was created. The kit consisted of an assortment of lightweight lifting members, slings, lines, metal fitting and elastomeric components, which allow rigging and recovery of a wide array of U.S. Army helicopters.

Doug Bentley, Sales Engineer for Cortland, said: "The biggest challenge that faced us was creating the hand-braided slings which were tricky as we had to develop them through a handicraft process. All slings, lightweight and heavy weight are constructed in the same way and have a lifespan of five years."

Cortland's success with the prototype led to the development and commission of 270 kits in total to serve the Army's fleet of helicopters and to be used in training.

For more information about Kaman Helicopters, contact John Navan, BCE & Subcontracts BD Manager. Email: [John.Navan@kaman.com](mailto:John.Navan@kaman.com), Phone: 860 243 7353, Web: [kaman.com](http://kaman.com)

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