

military/aerospace industry

the challenge

The desire to get home safely dwells in the back of the mind of every soldier. The battlefield provides enough mortal dangers without the soldier having to wonder whether or not the weapon they carry could injure or kill them at any moment. A single flaw in the design or fabrication of man-held weaponry could prove fatal for a soldier, leaving weapon suppliers and manufacturers no margin for error in the weapon development process.

For one maker of rocket launchers, such precision became imperative when the supplier of their rocket launcher inner tubes halted production, leaving them without a supplier of this critical weapon part. The rocket launcher inner tube, like the inside of a gun barrel, must not only be an exact shape, but also strong enough to protect the soldier from the rocket inside.

“For our rocket launchers, we needed a supplier with expertise in modern fabrication techniques,” said the company’s program manager. “We needed a team that could give us a perfect inner tube every time, without a welded seam, that could withstand the rugged, deadly arena of the battlefield.”

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the solution

The company shared the inner tube’s structural requirements and design drawings with Buckeye Shapeform—there was no question that Buckeye Shapeform’s deep-

draw technology could produce an aluminum alloy inner tube without the welded seams that potentially weaken similar products from other manufacturers. The real engineering challenge came from the aluminum’s tempering requirements.

Tempering the cylinder, a process that hardens and strengthens the metal, required heating the metal to a temperature high enough that the cylinder could lose its precise shape. The skilled team at Buckeye Shapeform developed additional engineering processes that allowed the inner tube to preserve its precise shape while maintaining the strict temper requirements.

“Building weapon parts is a highly-sophisticated endeavor,” Buckeye Shapeform project manager Carl Estock said. “It requires ingenuity, creativity, and the proper technology. ”Our technological know-how was a perfect fit for the design of the rocket launcher inner tube.”

In addition to the inner tube, the weapons manufacturer also needed a nose cone supplier for the rocket launcher’s firing round. During their initial visit to Buckeye Shapeform to discuss the inner tube project, company representatives noticed a cone-shaped part Buckeye Shapeform had created for another client—the quality of Buckeye Shapeform’s past work helped convince company representatives to enlist Buckeye Shapeform for the creation of the nose cone as well. Similar to the inner tube, the nose cone was created using deep-draw and additional processes to achieve tight precision tolerances. Once created,

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the solution (cont.)

Buckeye Shapeform then customized the nose cone with the necessary holes, notches, and plating.

The prototypes of both the inner tube and nose cone then underwent rigorous quality-control inspection. In fact, Buckeye Shapeform developed a water munition, designed to simulate the munition round in the rocket launcher, in order to confirm the strength and structural integrity of the new parts. Tests revealed successful completion of every precise requirement.

the results

Soldiers need to know that their equipment will serve its intended purpose—whether it’s blasting apart a brick wall or defeating an approaching enemy tank, a soldier’s life often depends on a well-built rocket launcher in everyday combat. With the soldier’s safety in mind from start to finish, Buckeye Shapeform provided an unmatched level of person-focused service, engineering expertise, and meticulous attention to the minutest detail demanded by its client.

“Every part of a weapon like the rocket launcher has to be precise, especially the parts involved with protecting the soldier, such as the inner tube,” the client’s program manager said. “Not only is the end product what we wanted, but the speed and price with which Buckeye Shapeform delivered the product met our expectations. Our rocket launcher works the way it should thanks in part to the work done by Buckeye Shapeform.”

And that is good news for soldiers in everyday combat.

To learn more about how Buckeye Shapeform products will work for you, visit our Web site at buckeyeshapeform.com, or call (614) 445-8433 or 1-877-728-0776 (toll free).

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