NEXT GENERATION UNDERWATER SYSTEM PROVIDES ADVANCEMENTS IN DESIGN, FUNCTIONALITY AND CAPABILITY WHILE REDUCING MANUFACTURING COSTS WITH SUBSEA FOAM

CUSTOMER INFORMATION

Strategic Robotics Systems (SRS) was founded in 2015 in response to a need for underwater systems which combine the functionality of a remotely operated vehicle (ROV) and an autonomous underwater vehicle (AUV).

SRS’ FUSION is an unmanned underwater vehicle (UUV), the only one of its kind that provides a comprehensive sensor suite which includes imaging, navigation, and communication sensors. For the most accurate data, the sensors are seamlessly integrated and each one placed in the optimum position. Imaging sensors produce high-quality imagery, and navigation sensors provide valuable positional data with a precise control system. The company caters mostly to defense customers, but the product is flexible enough to be adapted into commercial applications.

MATERIAL CHALLENGE

With a customer base that is predominantly defense-oriented, FUSION was designed to be highly automated, fully autonomous, strong, and durable. The UUV will be subjected to severe conditions such as rough seas and high current. Because of this, they needed machined foam that can withstand the beating it would take underwater as it collects data, and in some cases neutralize sea mines. They also required buoyancy material that satisfied the depth requirement of 1,000 feet.

Other materials considered included syntactic foam, which is typically used for deeper water applications. Aside from the depth capability of syntactic foam being unnecessary, there was also an expense factor considered since SRS needed material that was reasonably affordable.

Key Requirements:
- Depth Requirement of 1,000 feet
- Strong and durable material
- Machinable
- Affordable
SOLUTION

SRS president and owner, Jesse Rodocker, started and sold a similar company that manufactured ROVs for commercial applications. In this capacity, he became familiar with the features and benefits of LAST-A-FOAM® subsea buoyancy foam. It was a good starting point since it had proven its worth in previous applications. To his knowledge, there are few materials available that satisfy the cost, machinability, and manufacturability requirements of SRS.

General Plastics’ LAST-A-FOAM® R-3300 buoyancy foam is a closed-cell, hydrostatic pressure-resistant polyurethane foam that comes in a range of densities which satisfy various depth requirements. R-3318, with a density of 18 pounds per cubic foot, was eventually selected since it can be used in depths to 1,000 feet when coated. The material is engineered to resist penetration by water and can be easily machined.

Being a small company, SRS needed to outsource as much of the manufacturing process as possible. With General Plastics, SRS received fully machined parts, affording them the maximum cost efficiency they desired. It was possible due to General Plastics’ extensive machining capabilities. A local and knowledgeable customer service team that was always ready to help proved to be advantageous to SRS as they worked through various iterations of the product in the development phase.

To date, Strategic Robotics Systems has contracts with various defense customers, including the US Navy, Coast Guard, and the Royal Navy.

LAST-A-FOAM® R-3300 BENEFITS

- Hydrostatic and pressure-resistant
- Four products for different density/depth performances
- Provides buoyancy with depths to 1,200 feet, uncoated
- Excellent compressive properties
- Easy to machine, coat and paint
- Performs in freshwater or saltwater
- Available in big blocks and custom sizes