Maintaining DNV classification of the world's finest submersibles

A technical partnership that transcends the supply of buoyancy materials

Key products

Subtec® 3000

Challenge

Triton Submarines is synonymous with cutting-edge submersible design and manufacturing. They are dedicated to building the world's finest submersibles, challenging conventional thinking and pushing the boundaries of innovation to increase ocean awareness and advocacy.

The Triton 7500/3 submersible represents a significant advancement in ocean exploration technology, granting scientists, researchers, film makers and explorers unprecedented access to the bathypelagic zone - an enigmatic realm of the ocean that extends from 1,000 to 4,000 meters (3,280 to 13,123 feet) below the surface. This region, often referred to as the midnight zone, is characterised by perpetual darkness and hosts a myriad of unique marine life.

With its fully transparent acrylic pressure hull, the Triton 7500/3 offers passengers a remarkable 360-degree view of the underwater wonders, enabling an immersive experience during dives that can reach depths of 2,286 meters (7,500 feet) for durations exceeding 10 hours.

As the world's deepest diving three-person acrylic submersible, the Triton 7500/3 is not only a technological marvel but also a DNV certified vessel. As such, following an upgrade to enhance the submersible's capabilities, six additional DNV certified buoyancy modules were required to achieve the necessary uplift to allow this vessel to dive over 1.4 miles subsea. This necessitated a collaboration with a strategic partner who not only boasts in-depth knowledge of subsea buoyancy solutions but could provide DNV certified machined modules ready for installation, that would fit seamlessly within the composite structure of the submersible.

"We wanted to forge a long-term technical partnership with a materials specialist that understands and is able to deliver against the stringent requirements our submersible applications demand, from both a performance and DNV classification perspective. Additionally, we wanted a partner with a strong UK presence, enabling us to access technical assistance as and when we need it most. Base Materials provided exactly that, and more."

SOPHIE BENTHAM-WOOD
Executive Director of Global Marketing and Sales Strategies
Triton Submarines LLC

Solution

The designs of the new modules were provided by Triton Submarines and manufactured from Base Material's DNV approved Subtec® 3,000 buoyancy material, a low-density high-performance syntactic foam material, which is qualified for use in seawater depths down to 3,000 metres.

In addition to providing the Subtec® 3,000 buoyancy material, Base Materials delivered a full end-to-end solution, leveraging its network of trusted partners to conduct CNC machining of the modules to ensure they were built to meet the project's precise design specifications, ready for installation.

Prior to shipping the buoyancy modules to Triton Submarines' facility in Barcelona, Spain, where the submersible was being constructed, DNV personnel eye-witnessed the calibrated buoyancy checks, dimensional surveys, and stringently reviewed material documentation from Base Materials, to ensure the supplied modules complied with the customers specifications and met DNV requirements to maintain the vessels certification. After successfully navigating the review process, the modules were delivered to Triton Submarines prior to installation in less than four weeks, ahead of pre-agreed deadlines for the vehicle to then undergo both harbour and sea trials, and subsequent delivery to the end user.

About Subtec®

With densities from 400 – 650 kg/m³ and grades to suit a range of seawater depths from 2,000 metres to 11,500 metres, Base Materials' Subtec® buoyancy materials comprise high-grade hollow glass microspheres and a novel thermoset polymer matrix, producing ultra-high strength-to-weight characteristics with excellent water ingress resistance.