

Challenge Accepted.

COMPOSITE TRIPOD STANDS OUT FROM THE CROWD



» CASE STUDY: POLYSTRAND™ CONTINUOUS FIBER THERMOPLASTIC COMPOSITES



INNOVATIVE, ROLLABLE TRIPOD DESIGN GAINS STRENGTH AND DURABILITY FROM COMPOSITES

THE CHALLENGE

Rolatube, an innovative company with a fresh approach to product design, is the world's only bistable, rollable composite manufacturer. This unique material is at the heart of every product it makes. From deployable composite booms in space to lightweight antenna mast structures on the ground, its unique technology has attracted attention from engineers and product designers worldwide. The most recent product in Rolatube's portfolio is the Revolve™ ultra-compact tripod.

Tripod users, from outdoor enthusiasts to photographers, have several common expectations for this essential tool: strength to safely support their prized equipment, stability to get the most accurate shot, quick setup and deployment, and lightweight portability to get their gear easily from here to there. Traditional collapsible, folding tripods can be heavy and cumbersome especially when the user is lugging additional gear and equipment. The team at Rolatube saw an opportunity to leverage their rollable composite technology to reimagine the typical telescoping tripod design.

Based on expertise in reducing weight and improving portability of mast structures and antennas for the military, Rolatube engineers realized the legs of the tripod could be designed to roll into a compact and portable coil, eliminating the complexity and added weight of telescopic hardware. In order to achieve a lightweight, highly packable, and portable product while maintaining maximum strength and stability in the rollable legs, the designers at Rolatube knew they needed to incorporate a high-performing composite material.

THE SOLUTION

The team at Rolatube had a few non-negotiable performance requirements when considering composite material options for the tripod legs. It needed to be flexible yet durable to withstand a lifetime of unrolling and rerolling, lightweight to enable superior portability, and eco-conscious to meet Rolatube's commitment to sustainability. The tripod designers consulted with the advanced composite product experts at Avient, and trialed several formulations of Polystrand™ continuous fiber-reinforced thermoplastic composites.

A multi-layer composite laminate hit the mark. The glass fiber orientation provided lightweight strength in all directions while meeting the specific thickness required for the tube structure. The thermoplastic polymer base resin used also enables recyclability to support the company's sustainability goals. After successful prototyping and testing, the Revolve tripod could stand on its own in the marketplace.

THE IMPACT

The ultra-compact, patented rollable design of the Revolve tripod is the first of its kind. With a rolled storage size of just 7" x 6" (18 x 15 cm), the Revolve packs up at one-third of the size of traditional tripod designs. When deployed, the composite material quickly unrolls to form rigid tubes that are strong, stable, rugged, and weatherproof—providing the ultimate user experience even in extreme conditions.

To learn more about the Polystrand thermoplastic composites that made the Revolve tripod possible, visit www.avient.com/composites.