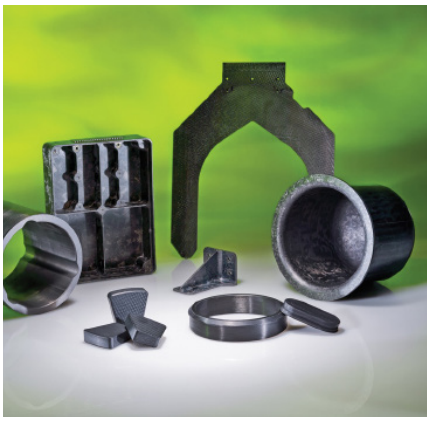
High-Performance Thermoplastic Composites

Innovative Solutions for Optimizing Critical Applications



Xycomp® and WR® thermoplastic composite components

Advanced Engineering Expertise

Expanding on our years of sealing and plastic expertise, Greene Tweed's polymer composite technology products are much lighter than traditional metals, with material properties that set us apart from the competition. Our lightweight solutions combine the high strength of a metal with the corrosion resistance of a plastic. Our highly engineered solutions provide exceptional fatigue performance while still delivering cost-effective components.

Customer Focus

Always on the forefront of technology, Greene Tweed works with our customers to provide reliable, efficient answers to their application needs. As a world-class leader in high-performance materials and customized engineered components, we leverage our expertise in a variety of markets to give our customers the most innovative and cost-effective solutions to their performance challenges.

At Greene Tweed, we listen to our customers. Our natural progression into the thermoplastic composite arena follows on the success of our Arlon® range of thermoplastic materials. This evolution of our industry proven plastics capabilities leverages our engineering expertise and design skills to the advantage of Greene Tweed's customers. With our in-house design and manufacturing processes, Greene Tweed helps customers enhance the performance of their products and capture new business. Our high-performance composite materials, Xycomp® and WR®, guarantee the benefits of Greene Tweed's global technical, sales, and manufacturing presence.

Effective Globally, Responsive Locally

Greene Tweed's worldwide support and technical service bring extensive experience to international markets and customers. The global reach of Greene Tweed provides our customers with the advantages and resources of a world-class organization. Our customers benefit from the skill and knowledge of highly trained local experts. With fully qualified engineering personnel in our offices throughout the Americas, Europe, and Asia, Greene Tweed delivers innovative solutions to individual customer challenges — helping our customers achieve their goals.

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Thermoplastic vs. Thermoset

Greene Tweed's advanced composites rely on thermoplastic resins for their matrix, giving our components a wider range of benefits than conventional thermoset resin systems. Benefits include improved chemical resistance, increased impact, toughness and ductility, more complex single-mold components, excellent post-molding machinability, recyclability, and infinite shelf life. Our composites are also radiolucent, offering unique benefits for applications involving X-ray or MRI technologies.

Composite Components

Our composite materials consist of long or continuous fibers, providing excellent mechanical properties as stress is transferred along the fibers through the matrix. Produced in woven fabric and chopped or continuous unidirectional tape product forms, these materials are used with our ProFusion® and Techna3™ molding processes for a wide range of applications, including highly complex shapes and threaded connections.

Greene Tweed's WR® series of composites, constructed into high-performance, extremely reliable wear components, is replacing metal in demanding applications. Our WR® 525 composite consists of a continuous carbon fiber combined with an advanced thermoplastic matrix. Our WR® 300 is compression-molded carbon fiber and thermoplastic. Their outstanding wear and friction properties, high-chemical resistance, and nongalling and nonseizing properties make them ideal for wear rings, bushings, and bearings.

Greene Tweed's Xycomp® engineered components offer a variety of benefits over traditional metallic materials. Xycomp® is lightweight and corrosion resistant while providing the ability to tailor its thermal expansion characteristics. With specific strength and stiffness values over 400 percent that of Titanium, combined with superior chemical compatibility and fire-resistant properties, Greene Tweed's Xycomp® composites deliver greater value. Xycomp® is well suited for a variety of critical applications, from bracketry to missile wings and fins.

Through the use of thermoplastic resin systems, Greene Tweed can match our composite materials to the corrosion resistance required of each customer application. By applying our materials' expertise, our composite design provides optimum wear resistance. Our materials do not suffer the same galling or damage as a system dependent on metal bearings and offer greater benefits over traditional plastic bearings. This affords Greene Tweed's materials unbeatable performance in highly loaded bearing systems within high-temperature, corrosive environments.

Composite Prepregs

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Superior Performance

Our engineering design skills allow us to optimize the directional properties, including thermal expansion and manufacturing of our composite materials, to produce the required strength and stability of the finished component. Greene Tweed thermoplastic composites provide many performance advantages over plastic and metal components. With a potential 80-percent savings in weight over steel and 44-percent savings over aluminum, composites are the clear choice over traditional metals.

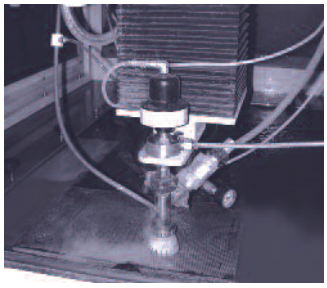
Greene Tweed's worldwide reach enables us to not only work with carbon and glass fiber systems but gives us access to more exotic fiber and resin systems as required by customer applications.

Quality By Design

Our customers demand prompt reliable service, and we have the resources in both molding and machining to meet their demands. With our in-house compression, isostatic, injection, and composite molding techniques, our customers know they are getting the best design for their applications. Our worldwide machining, capabilities, including laser, CNC machining and abrasive waterjet equipment, ensure that our customers are receiving fast, cost-efficient, and accurately machined components.

Laser

CNC Machining



Abrasive waterjet

Production Capabilities

Greene Tweed's in-house engineering services, such as 3D modeling, and our FEA knowledge, guarantee our customers a precise and accurate fit of all components and hardware, with the performance to match.

Greene Tweed offers an in-house global CAD system with various levels of composite FEA capability to transfer the design or production of composites to any of our worldwide sites. We have several production ProFusion® molding cells, as well as fiber placement and our proprietary Techna3™ molding capabilities. This technical capacity, combined with our solid supply chain, enables us to provide customers with a variety of production-process alternatives.

At Greene Tweed, we test and verify our products and processes to meet and exceed both our customers' and our own standards and expectations. We are at the leading edge of nondestructive testing for composites, with development of our Xyscan™ inspection capability to validate the integrity of our complex shaped composite components. Because we are ISO 9001-certified, Greene Tweed is an approved supplier for each of our market areas.

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