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INDUSTRY LEADING SOLUTIONS

INCREASE EFFICIENCY AND IMPROVE PERFORMANCE WITH INNOVATIVE THERMOPLASTIC COMPOSITES

With over 145 years of proven technological innovation, Greene, Tweed offers trusted solutions for your most critical applications. And Greene, Tweed has been at the forefront of the Petrochemical and Power industry for many years with our industry leading sealing solutions. We continue our tradition of innovation today, maintaining a global presence and offering the most effective solutions for our customers’ performance challenges.

SUPERIOR THERMOPLASTIC COMPOSITE SOLUTIONS

To ensure we continue meeting your industry’s evolving needs, Greene, Tweed offers a comprehensive portfolio of high-performance thermoplastic composite solutions for a wide range of applications – from wear and abrasion requirements to various structural components. These innovative composite solutions offer efficient and effective alternatives to other metallic and composite solutions.

WHY THERMOPLASTIC COMPOSITES?

The API 610 10th (American Petroleum Institute) edition includes PEEK™-based composites as a viable alternative to metallic wear materials and acknowledges the significant benefits of these advanced materials.

WR® WEAR RESISTANT COMPONENTS

Greene, Tweed’s WR® material portfolio won’t gall or seize, enabling extended MTBR (Mean Time Between Repair) and improved reliability. Offering outstanding wear and friction properties, extended dry-run performance, broad chemical resistance, our WR materials can reduce running clearances by more than 50%, in many cases without the risk of damaging expensive metal components. These reduced clearances minimize recirculation to maximize rotor stability and overall efficiency. WR materials also minimize shaft run out, deflection and vibration for dramatically reduced energy consumption and repair costs.

AR® ABRASION RESISTANT COMPONENTS

Media containing abrasives such as sand, coal ash and other solids can wreak havoc in pumps, warping flow paths and increasing the risk of failures. Greene, Tweed’s AR® components deliver exceptional abrasion resistance, handling entrenched particles to extend the service life of pumps.

AR materials have been specified on hundreds of power industry pumps including circulating water, open and closed cooling water, river water, screen wash and sump applications. These innovative materials commonly replace metallic line shaft bearings, bowl bearings and bowl wear rings on vertical pumps.

With 50% reduction in running clearances, WR and AR components maximize pump performance.

XYCOMP® STRUCTURAL COMPONENTS

Greene, Tweed’s Xycomp® high-performance thermoplastic composites provide an efficient and effective alternative to metal and other composite solutions. Xycomp offers significantly reduced energy and maintenance costs to keep your pumps running longer and more efficiently. From improved chemical and impact resistance to excellent post-molding machinability and recyclability, this innovative material offers a wide range of benefits for challenging Petrochemical and Power applications. And with our material expertise and global engineering resources, we have the capabilities to custom design a solution to suit your unique application requirements.

Xycomp eliminates eddy-current loss for dramatic energy savings and improved efficiencies.
**CHEMICAL & HYDROCARBON**

In these challenging environments, components must withstand aggressive media across a wide range of application parameters. With abrasive and/or corrosive liquids, sludges and slurries often leading to machinery failure and costs downtime, pump users require components that can help maintain consistent production capabilities. Our composite materials have performed successfully in these demanding environments for over a decade and have been applied in most API and heavy industry pump configurations.

**POWER GENERATION**

Fluids containing sand and other abrasives continue to be an issue for the power industry, creating expensive running conditions and reduced pump efficiency. Ultimately, equipment failure and unit shutdowns occur, leading to machinery failure and costs downtime, pump users require components that can help maintain consistent production capabilities. Our composite materials have performed successfully in these demanding environments for over a decade and have been applied in most API and heavy industry pump configurations.

**WATER & WASTE WATER**

Enabling the collection, purification and distribution of safe drinking water is a critical function of today’s operations. Pump components must be thoroughly vetted to ensure they do not have negative impact on food or pharmaceuticals. With FDA compliant components, our composite material can safely be used for applications involving drinking water, food processing or pharmaceutical equipment.
XYCOMP® STRUCTURAL COMPONENTS

Greene, Tweed’s Xycomp® high-performance thermoplastic composites provide an efficient and effective alternative to other metallic and composite solutions. With significant reductions in energy and maintenance costs, Xycomp keeps your pumps running longer and more efficiently.

The illustration to the right is a horizontal centrifugal pump, multistage. All sections in blue and purple show placement of Greene, Tweed’s products.

AR® ABRASION RESISTANT COMPONENTS

Maintaining the performance of wear material in pumps handling media containing solids has proved to be a challenge for power companies. Our AR® and ARHT materials offer superior abrasion resistance over competing materials, enabling longer product life and reduced downtime for your critical pump applications.

The illustration to the right is a vertical centrifugal pump, single stage. All sections in blue show placement of Greene, Tweed’s products.

AR® Benefits

- Exceptional resistance to damage from abrasive media for dramatically improved performance and extended product life.

- Simplified machining capabilities allow machining finished dimensions on standard machining equipment and offer reduced turn around times.

- With superior vibration damping properties, maintenance requirements are reduced and reliability is improved across your facilities.

- Achieve improved resistance to damage from abrasive media for dramatically improved performance and extended product life.

- Eliminated eddy current losses in magnetic driven pumps reduces energy costs, eliminates media heating and dramatically improves efficiency.

- Vibration damping capabilities allow for essential performance in critical application.

- Decrease your maintenance and component replacement costs with superior chemical resistance over traditional metallic materials.

- With superior vibration damping properties, maintenance requirements are reduced and reliability is improved across your facilities.

- Increase the life of magnetic driven pump, resulting in lower maintenance costs.

- Exceptional resistance to the harmful effects of friction offer improved performance and extended life for pump components.

- Improved performance over traditional metallic materials.

- Exceptional resistance to many common chemicals and fluids found in pumps reduces leakage and increases MTBF to keep your equipment running smoothly.

- With superior vibration damping properties, maintenance requirements are reduced and reliability is improved across your facilities.

- Simplified machining capabilities allow machining finished dimensions on standard machining equipment and offer reduced turn around times.

- Exceptional resistance to damage from abrasive media for dramatically improved performance and extended product life.

- AR®1 and ARHT materials offer superior abrasion resistance over competing materials, enabling longer product life and reduced downtime for your critical pump applications.

Xycomp Benefits

- Vibrations can cause dangerous leakage and costly pump failures. Xycomp minimizes these hazards, effectively damping vibrations and eliminating damage.

- Resistance to the harmful effects of friction offer improved performance and extended life for pump components.

- Up to 5 times lighter than steel, your shipping costs are reduced while the need for costly installation equipment is eliminated.

- Our proprietary compression molding and Techna3™ processes offer the unique capability for complex shapes and filler parts.

- Tighter clearances (up to 50% tighter than metallic wear parts) offer significantly increased efficiency and excellent vibration damping.

- Increased Efficiency

- Decrease your maintenance and component replacement costs with superior chemical resistance over traditional metallic materials.

- Wider clearances may be required, but the resulting efficiencies and vibration damping improve performance and extend the life of your pump.

- Reduces the need for costly vibration dampers.

- With superior vibration damping properties, maintenance requirements are reduced and reliability is improved across your facilities.

- Exceptional resistance to many common chemicals and fluids found in pumps reduces leakage and increases MTBF to keep your equipment running smoothly.

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- AR®1 and ARHT materials offer superior abrasion resistance over competing materials, enabling longer product life and reduced downtime for your critical pump applications.

- Eliminated eddy current losses in magnetic driven pumps reduces energy costs, eliminates media heating and dramatically improves efficiency.

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- AR®1 and ARHT materials offer superior abrasion resistance over competing materials, enabling longer product life and reduced downtime for your critical pump applications.
The Benefits of High-Performance Thermoplastic Composites

The illustration to the right is a horizontal centrifugal pump, multistage. All sections in blue and green show placement of Greene, Tweed’s products.

With extremely low coefficient of friction for excellent wear resistance, these components offer improved performance for a variety of critical applications.

Tighter clearances (up to 50% tighter than metallic wear parts) offer significantly increased efficiency and excellent vibration damping.

Reducing the strength of metal with superior non-galling and non-wearing properties offer longer product life and reduced pump failure.

Decrease your maintenance and component replacement costs with superior chemical resistance over traditional metallic materials.

AR® Abrasion Resistant Components

Maintaining the performance of wear materials in pumps handling media containing solids has proved to be a challenge for power companies. Our AR® and ARH™ materials offer superior abrasion resistance over competing materials, enabling longer product life and reduced downtime for your critical pump applications.

The illustration to the right is a vertical centrifugal pump, multistage. All sections in blue show placement of Greene, Tweed’s products.

AR® Abrasion Resistant Components

- With extremely low coefficient of friction for excellent wear resistance, these components offer improved performance for a variety of critical applications.
- Tighter clearances (up to 50% tighter than metallic wear parts) offer significantly increased efficiency and excellent vibration damping.
- Combining the strength of metal with superior non-galling and non-wearing properties offer longer product life and reduced pump failure.
- Decrease your maintenance and component replacement costs with superior chemical resistance over traditional metallic materials.

Xycomp® Structural Components

Greene, Tweed’s Xycomp® high-performance thermoplastic composites provide an efficient and effective alternative to other metallic and composite solutions. With significant reductions in energy and maintenance costs, Xycomp keeps your pumps running longer and more efficiently.

The illustration to the right is a magnetic drive pump. All sections in blue and purple show placement of Greene, Tweed’s products.

With extremely low coefficient of friction for excellent wear resistance, these components offer improved performance for a variety of critical applications.

Exceptional resistance to the harmful effects of friction offer improved performance and extended life for pump components.

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Eliminated costly current loss in magnetic drive pumps reduces energy costs, eliminates media heating and dramatically improves efficiency.

Up to 5 times lighter than steel, your shipping costs are reduced while the need for costly installation equipment is eliminated.

Our proprietary compression molding and Techna3Tm processes offer the unique capability for complex shapes and tubular parts.

Eliminated costly current loss in magnetic drive pumps reduces energy costs, eliminates media heating and dramatically improves efficiency.

Up to 5 times lighter than steel, your shipping costs are reduced while the need for costly installation equipment is eliminated.

Our proprietary compression molding and Techna3Tm processes offer the unique capability for complex shapes and tubular parts.

Vibrations can cause damage to high-speed bearings, pulleys, belts and other components. Xycomp lowers these vibrations, effectively eliminating vibration and significantly extending product life.

Xycomp® Structural Components

- With extremely low coefficient of friction for excellent wear resistance, these components offer improved performance for a variety of critical applications.
- Tighter clearances (up to 50% tighter than metallic wear parts) offer significantly increased efficiency and excellent vibration damping.
- Combining the strength of metal with superior non-galling and non-wearing properties offer longer product life and reduced pump failure.
- Decrease your maintenance and component replacement costs with superior chemical resistance over traditional metallic materials.
Note: WR300 was utilized to validate chopped carbon fiber filled composites in API 610. WR525 was utilized to validate continuous carbon fiber wound composites in API 610.

XYcomp® ARHT

- Almost universal chemical compatibility and corrosion resistance
- Excellent shock and impact resistance
- High-temperature capabilities
- Low wear in abrasive media
- Reduced lead times

WR AR1

- Excellent wear-resistance with FDA compliance
- Ideal for drinking water, food processing and pharmaceutical equipment
- Enhanced dry-run protection
- Excellent thermal shock resistance

**THERMOPLASTIC COMPOSITES**

**CHEMICAL & HYDROCARBON**

In these challenging environments, components must withstand aggressive media across a wide range of application parameters. With abrasive and/or corrosive liquids, sludges and slurry often leading to machinery failure and cost downtime, pump users require components that can help maintain consistent production capabilities. Our composite materials have performed successfully in these demanding environments for over a decade and have been applied in most API and heavy industry pump configurations.

**POWER GENERATION**

Flows containing sand and other abrasives continue to be an issue for the power industry, creating extended running efficiencies and reduced pump efficiency. Ultimately, equipment failure and unit shutdowns occur causing a drop in production for the plant. Greene, Tweed’s AR® composite has a demonstrated history longer than traditional materials for dramatically longer lifetimes, as well as reduced downtime and maintenance requirements.

**WATER & WASTE WATER**

Enabling the collection, purification and distribution of safe drinking water is a critical function of this industry’s operations. Pump components must be thoroughly tested to ensure they do not contaminate water supplies prior to being used in any drinking water application. Our composite materials have received WRAS (Water Regulations Advisory Scheme) approval and have been proven safe and effective for drinking water pumps.

**PHARMA & FOOD**

Equipment used in the production of items regulated under strict federal guidelines, such as the FDA U.S. Food and Drug Administration, must undergo stringent testing to ensure no negative impact on food or pharmaceutical products. With FDA compliant components, our composite materials can safely be used for applications involving drinking water, food processing or pharmaceutical equipment.

**MARKETS WE SERVE**

With expertise across a variety of markets, Greene, Tweed collaborates with industry leaders to understand the technical challenges of the Petrochemical and Power markets, developing the most advanced solutions on the market for a wide range of application-specific requirements.
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