FRP ADVANTAGES FOR UTILITY INFRASTRUCTURE

CREATIVE COMPOSITES GROUP

Why FRP?

Utility structures, such as poles and crossarms, are constantly exposed to damaging outdoor environmental conditions, such as cold, heat, moisture, and ultraviolet (UV) radiation. As a result, they must be designed and constructed with durability and longevity in mind to withstand long-term use. Otherwise, they will need to be changed out regularly, which can be costly and time-consuming. Unfortunately, traditional construction materials that offer the strength, flexibility, and wear resistance required for utility structure projects, such as wood, concrete, and steel, carry unique limitations that have led industry professionals to seek better solutions.

Enter FRP

Due to its high strength, lightweight, and excellent flexibility, Fiber Reinforced Polymer (FRP) has emerged as one of the leading alternatives to traditional construction materials across various industries and applications. In addition, the composite structure consisting of a polymer resin matrix reinforced with fibers results in a material with design flexibility and environmental durability unmatched by non-composite materials.

Are you considering FRP for your next utility infrastructure project? The experts at Creative Composites Group are here to help. Our company combines diverse FRP manufacturing capabilities with extensive industry experience. CCG is a leader in developing innovative products for OEM and public utilities applications.

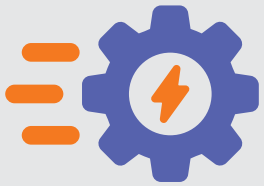
The following eBook outlines the advantages and applications of FRP for utility structures.

Advantages of Using FRP for Utility Projects

FRP offers many advantages over other building materials that make it better suited for utility infrastructure.

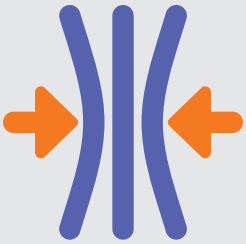
Faster Production & Installation Time

FRP can be produced 15 days faster and installed five days sooner than precast concrete. These shorter production and installation timelines can significantly reduce project lead times. Additionally, it allows crews to complete their work on weekends rather than on weekdays, which is safer for them and more convenient for end users.



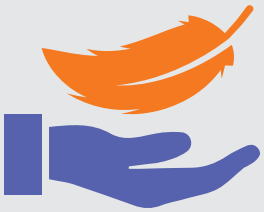
StormStrong® for Resiliency

StormStrong poles and crossarms are ideal for grid reliability enhancement. They are resilient in terms of being able to take a significant load during major storms with high winds and return to their normal state. Very high strength and moderate modulus of elasticity values equate to significant area under the load vs. displacement curve. The area under the curve is a direct indicator of the toughness or energy absorbing capacity of a material. FRP poles can absorb about 10x more impact energy than a steel pole and 2x more than a wood pole.



Lower Weight

Compared to conventional building materials, FRP is much lighter in weight (e.g., it is eight times lighter than precast concrete). As a result, it is easier and safer to handle during construction operations and cheaper to transport to installation sites. Additionally, it puts less stress on the finished structure, meaning it experiences less wear and tear related to weight over its lifetime.



Long Service-Life

The projected service-life is 75 years. Composite utility poles will not rot, spall or corrode due to the environment. In contrast, wood pole strengths have been known to decrease by as much as 80% over a few years when exposed to harsh environments.

Better Safety

FRP exhibits a number of unique properties that lead to improved worker safety. For example, it has a high dielectric strength, which reduces the risk of short circuiting.

No Dangerous Pesticides or Chemicals

Unlike treated wood poles, composite utility poles contain no dangerous pesticides or chemicals that will leach into the environment or cause occupational hazards. Ideal for school yard, downtown, highly occupied areas, and watershed applications.

Fire Retardant for Grid Hardening

Our standard StormStrong utility poles are manufactured with advanced fire retardant materials for optimal performance in the event of a brush or pole top fire. Specifically, the poles will pass UL94 (VO), ASTM E84 Class A, and ASTM D635 - "Self Extinguishing".

FireStrong™

Adding fire-resistant covers further increases the durability and longevity of FireStrong utility poles in fire-prone areas. As a result, FireStrong poles will be less susceptible to damage and degradation caused by the heat from a fire, providing additional protection to your grid.

Greater Guarantee of Adherence to Industry Standards

FRP materials from Creative Composites Group are pre-engineered to high quality standards. As a result, users can be confident they will perform as expected in their applications. The engineered pole is manufactured in a production plant and exhibits a coefficient of variation of less than 5%. You get a stronger pole that will maintain its design strength over an extended period of time.

Easier Maintenance Requirements

FRP is highly resistant to rot and rust, even when exposed to water (including rain, snow, and ice) and strong chemicals.

Lowest Total-Cost of Ownership

Short production and installation timelines, combined with excellent durability, make FRP an extremely cost-effective option for utility projects. It requires less labor when the structure is being built and provide a longer use-life and extends your replacement time-line.

FireStrong Temperature Monitoring

A temperature monitoring system can be combined with the FireStrong system. The system is engineered to continuously monitor the temperature experienced by the pole and permanently record the highest temperature measured on its surface. During post-fire inspections, utility workers can compare this measurement to evaluate whether the utility pole has to be replaced.

In-Mold Coating offers Ultimate Protection

After passing through the wet-out bath, the reinforcing fibers pass through a heated mold. This is where the heat initiates a cross-linking process with the resin-impregnated reinforcements and the coating. This process mechanically bonds the coating with the composite utility pole and is the ultimate coating option that CCG offers.

Utility Structures From Creative Composites Group

Given its numerous advantages, Fiber Reinforced Polymer is used by utility companies, especially in challenging environments. At Creative Composites Group, we offer the following FRP utility product solutions:

1. Utility Poles

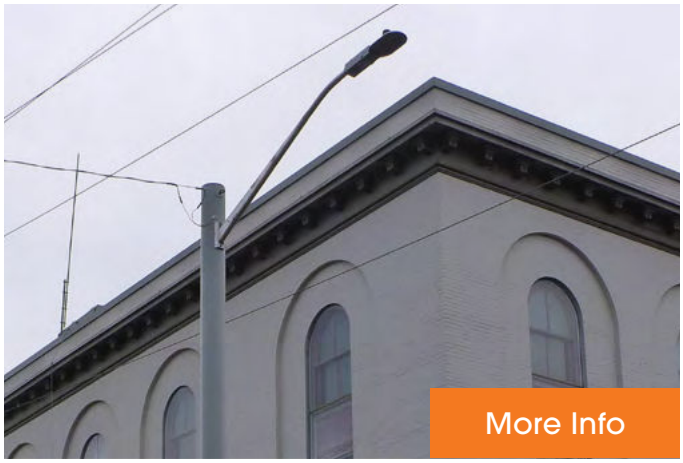
Our **StormStrong® pultruded composite poles** are customized to suit the customer's strength and stiffness requirements. They are categorized as ANSI 05.1 wood equivalent poles and verified as having the same reliability as steel poles. Distribution poles are available in Classes 1 to 10 with a maximum length of 80 feet. Transmission poles are available in Classes 1 to H6 and various lengths.

2. Crossarms

Our **StormStrong crossarms** are engineered with reliability in mind. The Fiber Reinforced Polymer components are approved by the Rural Utilities Service (RUS) and compliant with National Electric Safety Code (NESC), resulting in enhanced grid reliability. Deadend crossarms are available in 3-5/8" x 4-5/8" and 4" x 6" rectangular sections. They can come with or without hardware that is hot dip galvanized as per ASTM D153. Tangent crossarms are available in 3-1/2" x 4-1/2", 3-5/8" x 4-5/8", and 4" x 6" rectangular cross-sections.

3. Light Poles

Our **direct burial light poles** are designed and constructed for use alongside NEMA standard electrical boxes. They are made from toughened polyester resin that is reinforced with high-strength electrical-grade fiberglass. Backfill options include concrete, pole-set foam, and gravel. If the customer needs surface-mounted poles, we have surface-mounted bases in standard and breakaway variations that are approved by the National Cooperative Highway Research Program (NCHRP).



Partner With Creative Composites Group

Your Single Source for StormStrong® Utility Poles and Cross Arms or FireStrong Poles Using FRP Composites

The Creative Composites Group is dedicated to bringing technological advancements into the utilities industry and pushing beyond the limitations of traditional concrete, steel, and wood. We are a leader in technical innovation that is backed by the industry's most comprehensive FRP manufacturing group.

As Creative Composites Group, we can help you engineer and manufacture the most advanced FRP utility poles and cross arms to meet the needs of future generations. Our innovations include advanced coatings, UV enhancement, fire resistant products like FireSleeve™ and integrated temperature monitoring that have passed stringent fire and strength testing.

Other companies commoditize FRP in off-the-shelf shapes and forms; Creative Composites Group does not. We offer comprehensive engineering, design and consultation for demanding utilities infrastructure projects including: Corrosive Environments, Difficult to Access Locations, High Storm Risk Areas, Fire Risk Applications, Pest Mitigation and Demand for Longer Service-life

Discover Your Engineered FRP Utility Pole & Cross Arm Manufacturing Parter

Our capabilities include the broadest range of industry-leading FRP solutions to manufacture your infrastructure projects. That's possible only with our proven engineering processes, end-to-end collaboration, service and support resources. Since StormStrong composite poles and cross arms last longer than conventional materials they often have a lower lifetime cost when you consider longer service-life and low to no maintenance costs.

Contact us for your next engineered FRP utility infrastructure project. We'd be thrilled to discuss it with you.

Contact our FRP Utilities Infrastructure Specialists

CreativeCompositesGroup.com

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