

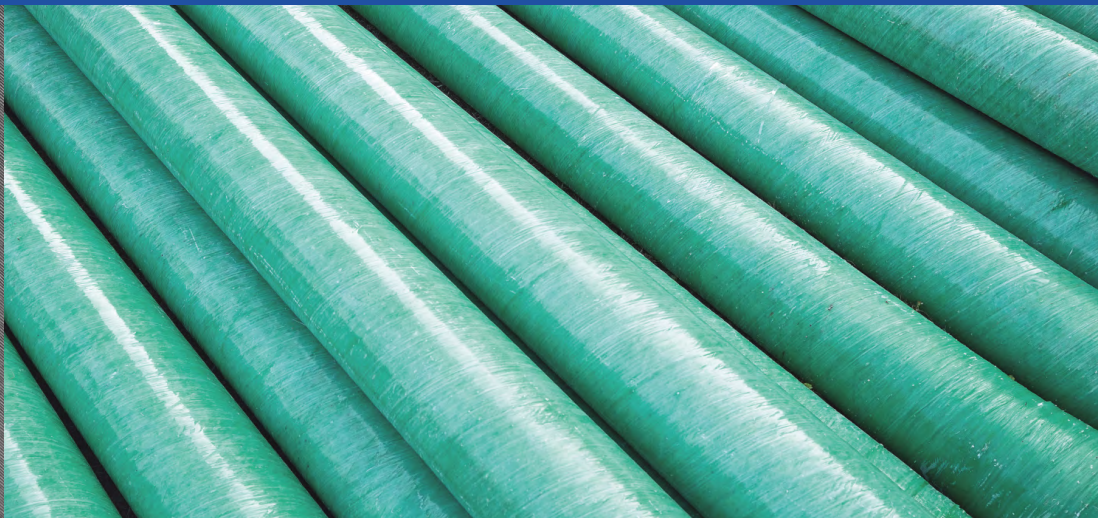
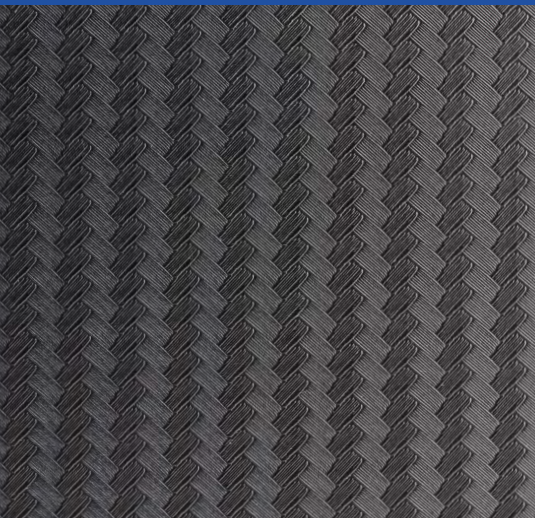
Challenge Accepted.



# INNOVATIVE CARBON FIBER SOLUTIONS FOR SG PIPE REPLACEMENT



CASE STUDY: FIBER-LINE™ HIGH PERFORMANCE ENGINEERED FIBERS





# INNOVATIVE CARBON FIBER MATRIX ORGANIZATIONS AND INFUSION FORMULATIONS ENABLE PIPELINE RENEWAL

## THE CHALLENGE

Clean energy sources such as wind, solar, and hydrogen are gaining popularity worldwide and will soon become standard. But using existing energy infrastructure to deliver these sources, especially among nations that have relied on traditional energy sources for centuries, has limitations. For example, while hydrogen power is emerging as a leader in renewable energy, there are challenges in transporting and storing it.

Energy producers who want to harness hydrogen power must either build new or retrofit existing pipelines. Utilizing existing pipe systems enables the transition from natural gas to hydrogen delivery quickly and economically. But specific materials with exceptional tensile and burst strength are needed to successfully retrofit these existing pipelines to accelerate conversion and prevent further environmental damage. These materials must be able to withstand the effects of hydrogen transfer without contaminating the energy source or harming the pipe in order to keep the energy system safe.

To help address these challenges, Avient teamed up with a leading technology development company. This company designed an internal pipeline applicator to reinforce the pipe from the inside to handle the new pressure demands of hydrogen. However, the company needed a new material for this applicator that could meet the necessary strength, flexibility, and adhesive properties required for it to be easily deployed in the field.

## THE SOLUTION

Avient worked with the company to develop a novel reinforcement material comprised of Avient Fiber-Line™ carbon fiber tows in which the filaments were manipulated to increase strength and improve abrasion resistance. PlastiComp™ then took the carbon tows and formed a high-strength tape coated with an adhesion promoting layer, a critical component of the renewal system.

## THE IMPACT

The impact was two-fold. The reinforcement material increased breaking efficiency, resistance to long-term creep, elevated temperatures, and cyclical strain-based fatigue. These elements were critical to the long-term efficacy and safety of the pipeline applicator. Moreover, the innovative and collaborative nature of the pipelining system can increase future pipeline safety, limit environmental, climate, and public impact, and provide a cost-saving solution to energy providers around the globe.

## SOURCE:

[Repurposing gas infrastructure for hydrogen | 2020 Siemens Energy Global \(siemens-energy.com\)](#)

To learn more about Fiber-Line high performance engineered fibers, visit [fiber-line.com](https://www.fiber-line.com).

