



## Follow the green.

Start the journey towards greater energy efficiency and lower operating costs with Beacon™, the first and only Carbon Fiber production carbon footprint assessment program.

Harper's ground-breaking Beacon™ program offers Carbon Fiber manufacturers the ability to evaluate the carbon footprint of their manufacturing process and identify opportunities for improvement.

With its extensive experience in the industry since the market's inception, Harper has developed a model that analyzes various line sizes, precursors, integration scenarios and energy recovery options and ranks the environmental impact of the process line, whether existing or planned. The program generates facility-specific metrics to be compared against a common industry baseline and then utilizes the information to develop improvement plans to drive greater energy recovery and lower operating costs.

### Your Guide to a Greener Future

The Carbon Fiber industry is on the cusp of reaching adoption in several key markets, such as automotive, that will set the path for the future of the industry. It is at this critical maturity point that we must focus on achieving greatest output cost effectively with environmental responsibility in order to secure widespread utilization.

The Beacon model is a complex analysis of over one hundred integrated line design parameters. Beacon defines the range of carbon footprints created by various process integration strategies and then ranks the environmental impact of those process variations as a function of scale operation, taking into account line size, production rate, integrated heat recovery and emissions controls.



Harper's Beacon process goes further to then analyze equipment features and integration parameters in each step of the process, including oxidation, carbonization, and graphitization, and propose design improvements to yield increased energy efficiencies. All major aspects are considered, including choice of utilities, impact of retention times, packing efficiency, use of energy recovery such as preheated air, selection of waste gas handling and treatment systems, and more. The endeavor to incorporate the impact of waste gas handling was achieved with inputs from industry experts in emissions abatement such as Anguil Environmental Systems.

Contact Harper International today for a detailed assessment of your facility's current carbon footprint and to identify future opportunities for improvement. It's time to give efficiency the green light.

Another innovation from  Harper International