
SOLVING
ENVIRONMENTAL
CHALLENGES
through innovation and imagination
CAMBRIDGE
ENVIRONMENTAL
TECHNOLOGIES

COMMITTED TO THE ENVIRONMENT

through a commitment to human ingenuity

Founded in 2009, Cambridge Environmental Technologies is a fast growing new division of Cambridge International, a century old and world leading U.S.-based engineering and manufacturing company specializing in material conveying and filtration systems.

Our foremost goal is to help create a cleaner and healthier environment by innovating solutions to environmental challenges. These solutions are either entirely new or are superior to existing technologies in effectiveness, efficiency, and affordability. We accomplish this by combining the innovative and imaginative thinking of our people with the proven technologies of our parent company.

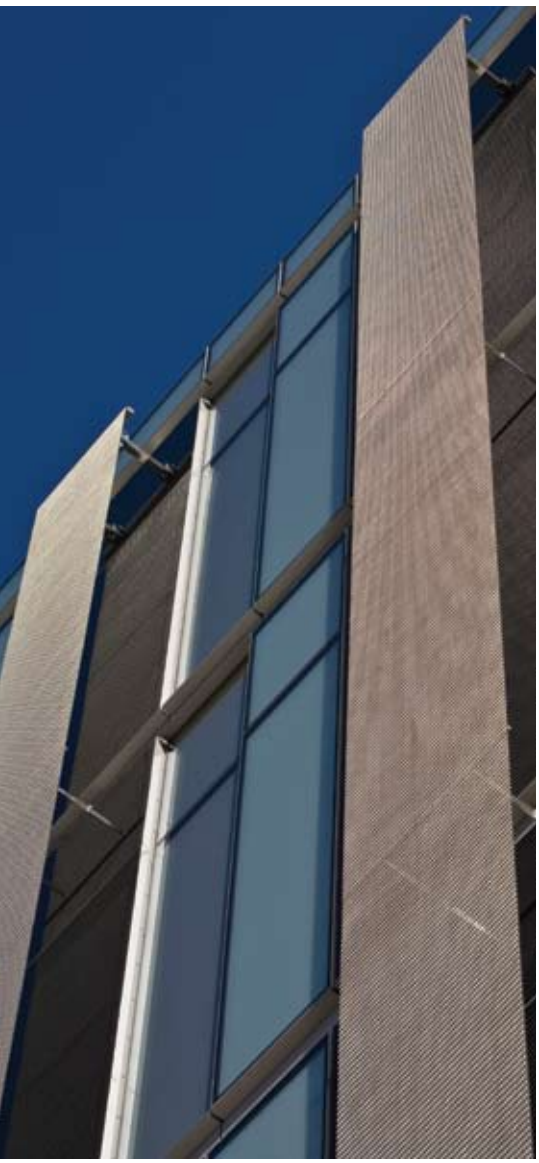
At our core, we're a multidisciplinary industrial design and engineering team who's areas of expertise include:

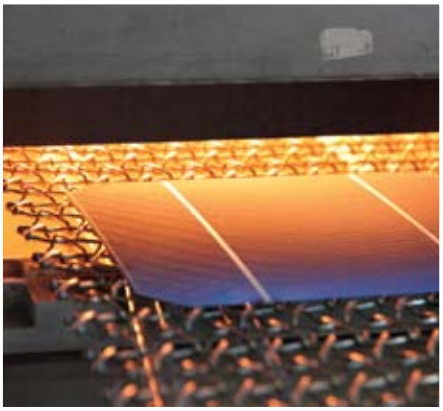
- Improving air and water pollution
- Reducing energy consumption and greenhouse gas emissions
- Making renewable energy sources more viable
- Managing waste and natural resources

Explore Cambridge Environmental Technologies and discover a company committed to making our world a better place.

WELCOME

to a new breed of environmental company





Cambridge Environmental Technologies is organized to be a hotbed of innovation. Here, creative, off-the-wall thinking is both cultivated and expected each and every day.

Already, we've designed, engineered and manufacture a revolutionary new form of electrostatic precipitator (ESP) that's far more effective at capturing particulates than the old technology it replaces.

Through a partnership with CHIPTEC Wood Energy Systems, we also provide a next generation biomass gasifier that transforms low-value waste material into clean renewable energy and other byproducts more affordably and efficiently.

Additionally, the engineering team that makes up Cambridge Environmental Technologies developed new technologies and products for its parent company. Examples include an architectural passive solar shading system for Cambridge Architectural and a specialized conveyor belting system for the solar cell market for Cambridge Engineered Solutions.

POLLUTION CONTROL

more efficient, more affordable

We Put the ESP in Motion to Keep Your Operations Moving

The Kinetic ESP by Cambridge Environmental Technologies revolutionizes ESP technology by replacing static collection plates with a series of automated rotating stainless steel mesh belts. This belt system derives directly from the perfected and proven mesh conveyor systems of our parent company, Cambridge International, the world's leading expert in moving parts and conveyor belting systems.

Kinetic ESP technology provides a host of performance advantages over older ESP technology to increase productivity, profitability and efficiency.

Increased Surface Area for Particulate Capture

The customizable three-dimensional geometry of the stainless steel mesh belting provides up to double the total collection surface area compared to a traditional collection plate of the same length and width.

One Third Smaller Than Ordinary ESPs

The Kinetic ESP's super efficient kinetic collection belt system is what allows the unit to be far more compact in size, reducing its footprint within a plant. A Kinetic ESP, a third smaller in size than a traditional ESP, achieves the same collection efficiency.

Rapping is for Hip Hop, Not Pollution Control

As the Kinetic ESP's mesh belts slowly rotate within the unit's casing, a cleaning system located at the bottom of each belt continuously removes particulates from the collection belt into the hopper. This innovative Clean-In-Place (CIP) design reduces downtime for maintenance, while eliminating the need for a collection electrode rapping system – be it vibration, piston drop, hammer, or sonic horn.

No Rapping Re-Entrainment

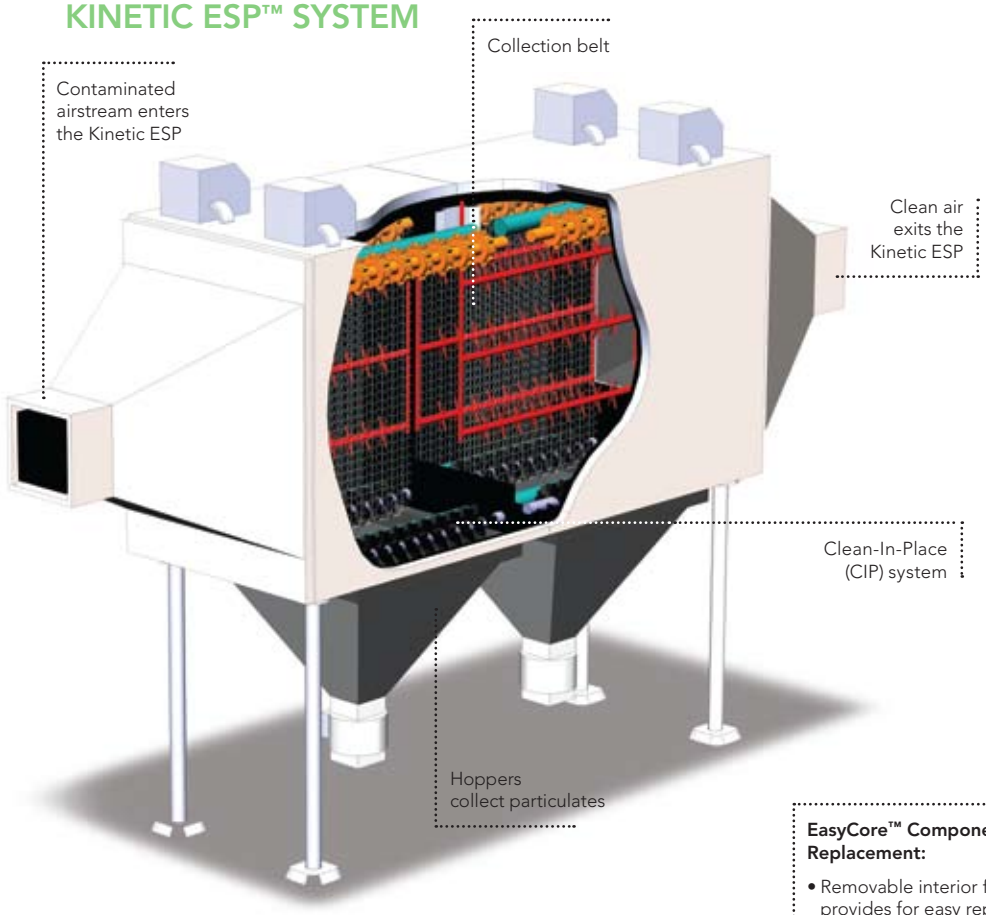
Rapping of collection electrodes is the biggest contributor of re-entrainment, which is responsible for 60-80% of total particulate emissions. By eliminating rapping of the collection electrodes, the Kinetic ESP effectively eliminates rapping re-entrainment.

Tackles Even Moist and Sticky Particulates

Ordinary dry ESPs cannot be used to capture moist and sticky particulates. The Kinetic ESP overcomes this limitation. Its continuous cleaning system tackles the sticky stuff just as easily as dry particulates. This unique capability eliminates the need for a wet ESP and the negative attributes of these systems, such as generation of wastewater and reduced airflow efficiencies. It also makes the Kinetic ESP especially valuable in certain industries – such as ethanol production – where moist and sticky byproducts must be effectively controlled to avoid downtime for maintenance and cleaning.

Kinetic ESP is patent pending.

KINETIC ESP™ SYSTEM



Retrofit an Existing ESP with a Kinetic ESP Module to Ensure Compliance

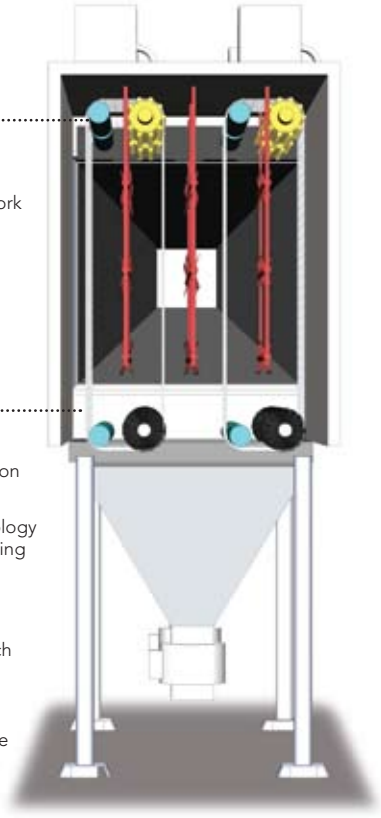
To ensure compliance with existing or proposed regulation, small Kinetic ESP modules are retrofitted readily onto the back of existing traditional ESPs. These modules act as polishers by removing residual particulates that existing ESPs fail to capture, providing a cost-effective solution to ensure systems are operating efficiently.

Entirely Scalable

From the smallest processes with minimal airflow to the highest airflow applications – such as power generation – Kinetic ESPs are scalable to suit the largest range of applications.

Meets Boiler MACT Requirements

Kinetic ESP has been designed to meet and exceed current and proposed Boiler MACT regulations.

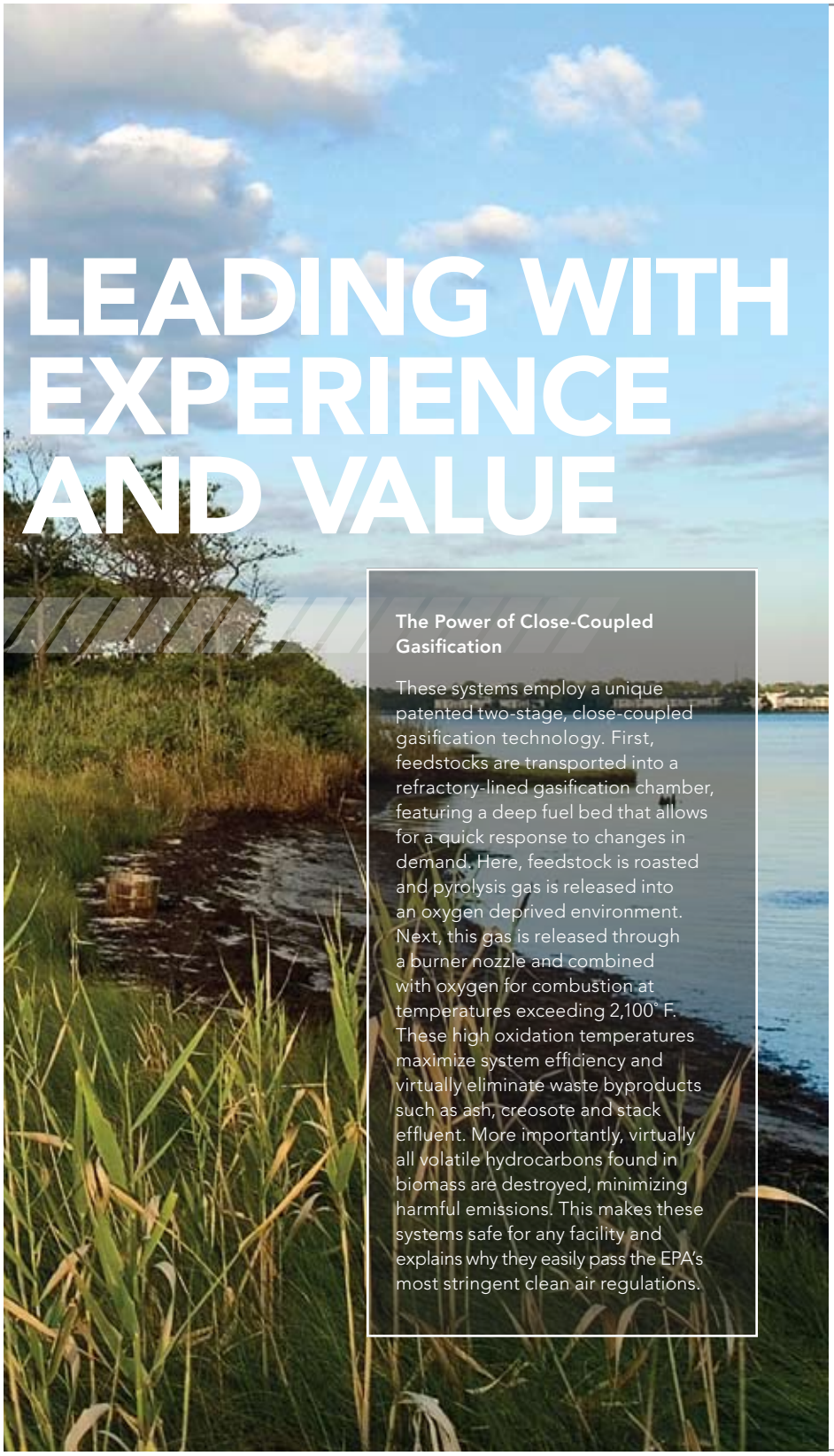


EasyCore™ Component Replacement:

- Removable interior framework provides for easy repairs, cleaning, and replacement
- For maximum efficiency, additional cores can be stocked and switched in and out for routine maintenance and repairs

Automated System:

- Eliminates need for collection electrode rapping
- System uses belting technology as opposed to plates, creating greater surface area and collection efficiency within a smaller footprint
- Collection electrodes stretch rather than warp, which eliminates the negative impact of spacing between the collection and discharge electrodes



LEADING WITH EXPERIENCE AND VALUE

The Power of Close-Coupled Gasification

These systems employ a unique patented two-stage, close-coupled gasification technology. First, feedstocks are transported into a refractory-lined gasification chamber, featuring a deep fuel bed that allows for a quick response to changes in demand. Here, feedstock is roasted and pyrolysis gas is released into an oxygen deprived environment. Next, this gas is released through a burner nozzle and combined with oxygen for combustion at temperatures exceeding 2,100˚ F. These high oxidation temperatures maximize system efficiency and virtually eliminate waste byproducts such as ash, creosote and stack effluent. More importantly, virtually all volatile hydrocarbons found in biomass are destroyed, minimizing harmful emissions. This makes these systems safe for any facility and explains why they easily pass the EPA's most stringent clean air regulations.

The Advantages of Keeping It Cool

Our systems operate at far cooler temperatures than others, producing pyrolysis gas at 1,000˚ - 1,400˚ F, which is well below ash fusion temperatures. This enables these systems to accommodate a broader spectrum of low value biomass fuels with moisture content up to 55%. Lower temperatures also eliminate the potential for mineral fusion within the system, a troublesome occurrence with other gasifiers that results in system downtime and labor intensive grate maintenance.

Automated Operations and Controls, Accessible from Anywhere

These gasifiers feature fully automated fuel storage and delivery systems, and computerized system controls – minimizing labor costs. Intuitive touchscreen control panels utilize Programmable Logic Control (PLC) programming and trouble-shooting is conducted by in-house technicians. Controls can also be conveniently accessed remotely from anywhere in the world, via the Internet.

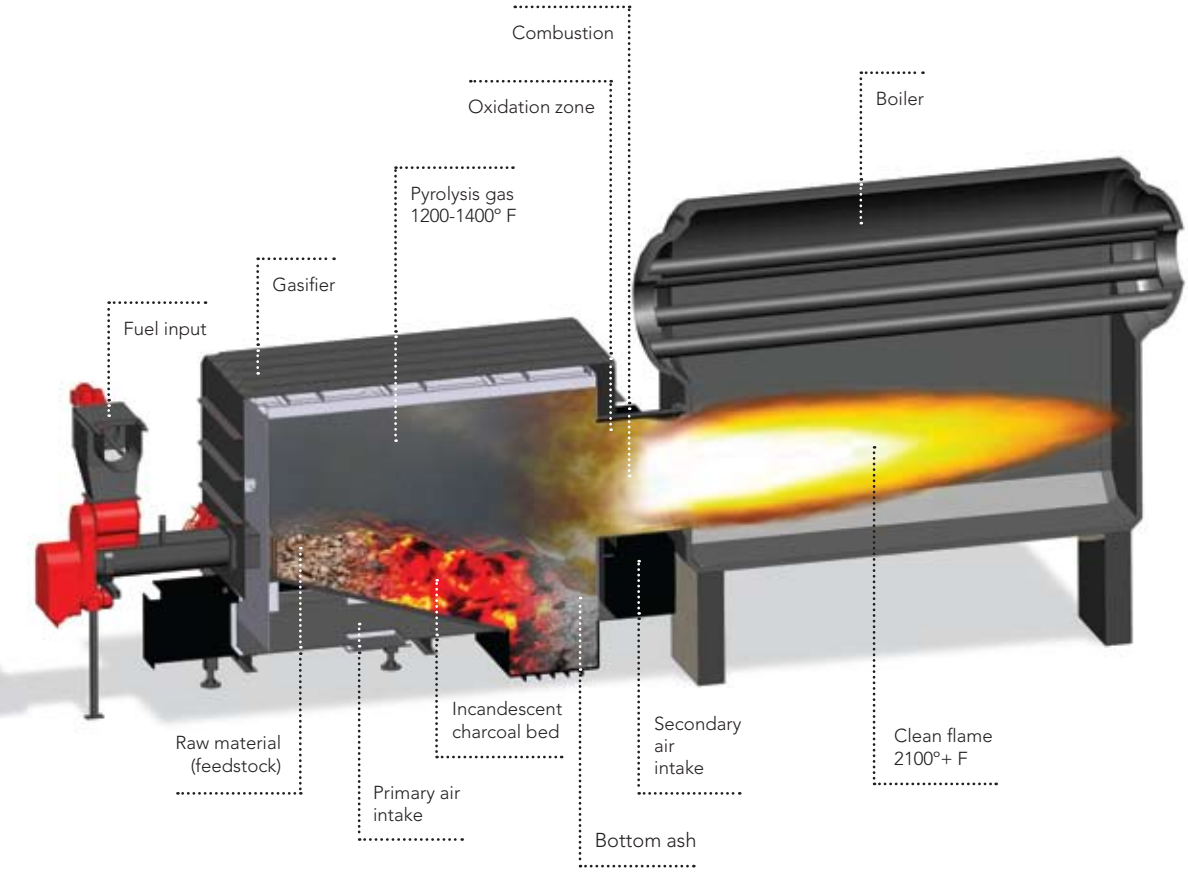
Scalable and Adaptable Systems to Suit Your Application

Our variable biomass gasifiers provide a turndown capacity of 10:1 or better, and are offered in a range of scales to match your application. Whether you operate a school or university, a municipality, or a large-scale agricultural or industrial operation, with system outputs from 1.5 to 60 MMBTU/hr, there's a system to fit your needs. Plus, they are designed to adapt easily to the widest variety of heat exchangers and uses, including hot air furnaces, hot oil systems, and hot water and steam systems generating up to 900 psig superheated. Systems are also easily retrofit to existing boilers.

100% Manufactured in the U.S.A.

VARIABLE BIOMASS GASIFIER

POWERED BY CHIPTEC
Wood Energy Systems



Feedstock Specifications

Moisture Content:
from 6 - 55% (wet basis)

Mineral Content:
up to 10%

Particle Size:
nominal <2.5"
(with exceptions)

Fines: < 5% sander dust
and wood flour

Acceptable Feedstocks

- Green or dry chips or hogged fuel
- Hardwood or softwood chips or hogged fuel
- Wood pellets
- Saw dust and shavings
- Crushed, cleaned and magnetized pallets
- Certain nut shells and husks
- Railroad ties
- Particle board
- MDF
- Plywood
- Paper cubes
- Coconut shells
- Certain seeds
- Processed and cleaned construction and demolition waste

Note: Other feedstocks may be possible, please contact us for additional information and discussions regarding the use of other feedstocks.

Compare oil burning to biomass gasification with this system. Annually, a plant can replace 1.0 million gallons of oil with 22,000 tons of biomass by using a variable biomass gasifier designed for ≤29 MMBTU/hr and realize an annual fuel savings of $2.12 million. This savings pays back the cost of the system in just 9 months and the cost of the complete building project in 5.2 years. More dramatically, over the 25 year minimum expected lifecycle, the plant will save nearly $52.5 million.

	Quantity		Cost		Annual Cost
Oil	1,000,000 gal.	X	$3/gal.	=	$3.0 million
Biomass	22,000 tons	X	$40/ton	=	$880,000

Annual Savings	$2.12 million
Cost for ≤29 MMBTU/hr variable biomass gasifier system	$1.5 million
Cost for complete building project	$11 million
ROI – complete building project	5.2 Years
Savings Over 25 Years	$52.5 million

By Committing to Your Success, We Ensure Our Own

Our century old parent company, Cambridge International, passes down an important ingredient for success to Cambridge Environmental Technologies – an unyielding commitment to providing a complete range of best-in-class services to help ensure our clients' efficiency, competitiveness and profitability. Like our parent company, Cambridge Environmental Technologies recognizes that our success is directly tied to yours. We look forward to working with you.

Services We Provide to Ensure Your Success

Multidisciplinary Consultative Engineering – Experts in a wide range of scientific fields – engineering, chemistry, and biology – explore your specific challenges from all angles, ensuring that all possibilities are considered.

Funds Assistance – We offer expertise in funding during project development. Money is available from numerous sources and we can help you secure it through grant identification, writing, and submittal assistance.

Custom System Design – We provide complete custom systems design and integration services.

PE Approval – An on-staff PE provides approval for quicker and more affordable implementation.

Manufacturing – In-house, energy-efficient, state-of-the-art 300,000 sq. ft. manufacturing facility, with highly-skilled and experienced fabricator ensures comprehensive quality control.

Installation and Commissioning – Turnkey installation and commissioning services are available.

Performance Evaluation – Onsite services are available for both new systems and retrofits.

Troubleshooting – We provide a 24/7/365 customer service hotline to ensure you maximize productivity.

The environment couldn't be any closer or more personal

One needs only to visit Cambridge Environmental Technologies to understand why we exist and why our people are so passionate about what they do.

Located in the heart of the Chesapeake Bay Watershed on the Eastern Shore of Maryland, our company's own backyard serves as a daily reminder of the importance of making both personal and organizational choices that help to protect and preserve our invaluable natural resources.

Here, eagles soar past our windows, waterfowl of numerous species congregate in the fields surrounding our facility, and our rivers and other nearby bodies of water teem with fish and crab. Surrounding wetlands are cloaked in equally diverse flora and fauna.

Major industries of our region – fishing, crabbing, seafood processing, farming, tourism and others – are economically dependent upon the continued well-being of our environment.

Learn more about our people, products and services today at CambridgeEnviroTech.com

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