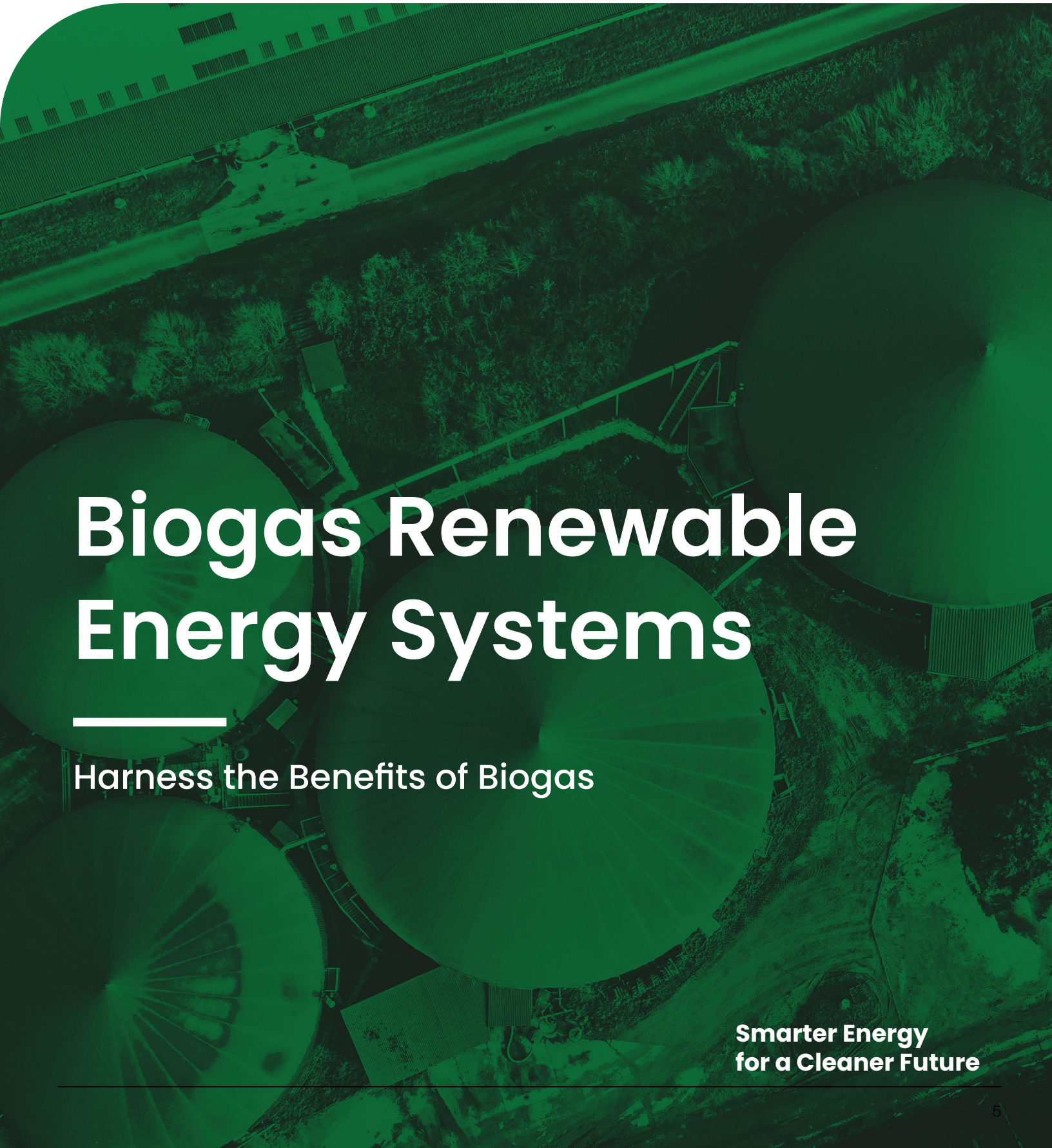
Capstone Green Energy



Biogas Renewable Energy Systems

Harness the Benefits of Biogas

Smarter Energy for a Cleaner Future

Renewable Energy from Biogas

Capstone Green Energy continues to transform the way businesses think about energy production. There is a growing transition to renewable energy sources and technologies on a global scale. Capstone microturbines cleanly burn waste gases such as methane and other gases from landfills, wastewater treatment facilities, and renewable natural gas to create renewable power and thermal energy.

Waste material buried in landfills biodegrades over time to produce methane gases. Anaerobic digestion of domestic wastewater, agricultural waste, and food-processing waste also produces these gases. Many sites flare these waste gases or, worse yet, vent them directly into the atmosphere. The best environmental solution is to use the gas to generate renewable energy.

Whether for power generation alone, for cogeneration or trigeneration - Capstone is helping businesses meet their energy needs while boosting reliability of their energy supply, improving the predictability of energy costs, and lowering their carbon footprint

Features and Benefits

+ **Economical** biogas-CHP plants provide a maximum overall fuel efficiency.
+ **Environmentally Friendly** low emissions exceed some of the world's toughest emission standards.
+ **Sustainable** a green waste-to-energy application can decrease your business' carbon footprint.
+ **Reliable** tens of millions of operating hours and counting.

A Broad Suite of Applications

How Does it Work

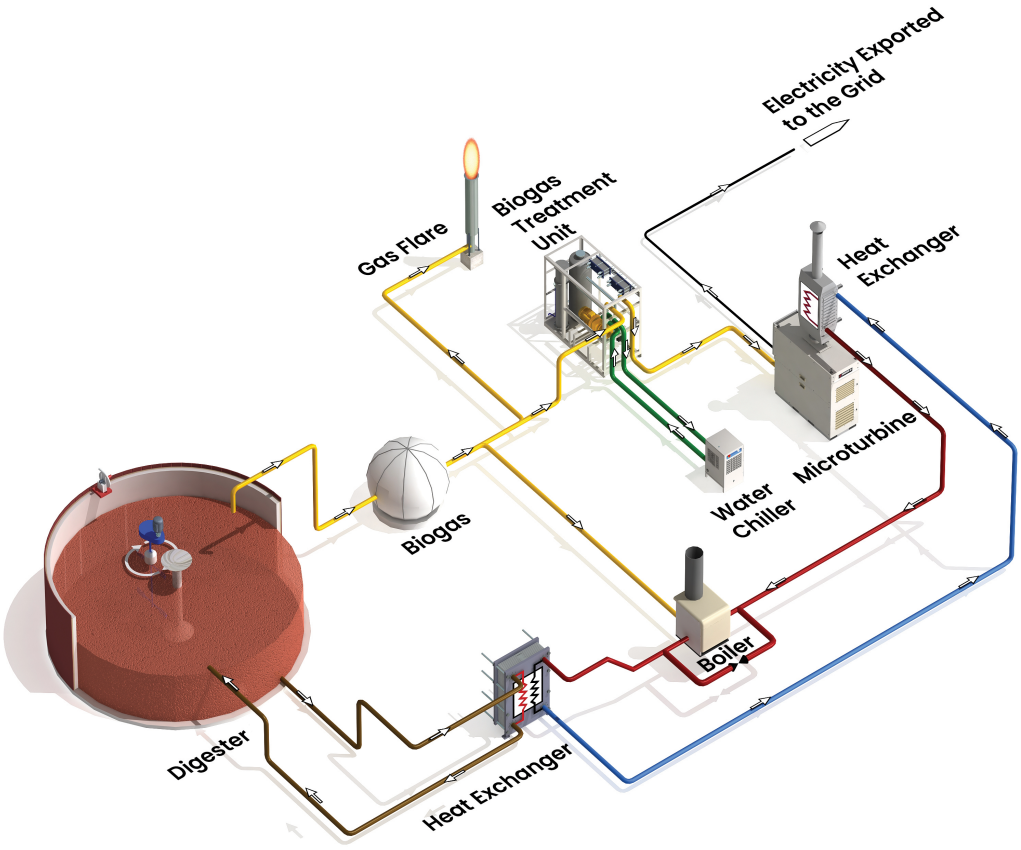
Biogas is produced by the anaerobic decomposition of organic matter in anaerobic sludge digester. Digester biogas is treated to remove impurities and liquids before being used as fuel in a microturbine to generate electric power and thermal energy. The components of a typical biogas plant are illustrated below:

Digester:
Anaerobic digestion is a process through which bacteria break down organic matter—such as animal manure, wastewater bio-solids, and food waste—in the absence of oxygen. A double membrane storage tank can act as a buffer, ensuring a stable supply in flow and pressure of raw biogas to the biogas conditioning unit and biogas boiler.

Gas Flare:
The flaring system is a safety device. It is aimed at preventing overpressure in the biogas systems in case of shut down for maintenance or as an emergency procedure.

Biogas Treatment Unit:
On-skid equipment generally consists of a gas blower, gas scrubber, gas cooler, separator, heater, and a compressor to remove contaminants to make the biogas suitable for use. It may also include an active carbon filter.

Microturbine:
The microturbines consume the biogas coming out of the biogas conditioning unit to generate electricity and waste heat. The electricity can both be used to meet on-site demand or exported onto the utility grid.



Heat Exchanger:
The waste heat from the microturbines may be recovered and transformed into hot water to be used as a primary source of heat or as a supplement of the biogas boiler to meet the thermal needs of the digester or other site thermal needs.

Boiler:
A boiler can be used as a primary source of heat or as a supplement to the microturbines to meet the thermal needs of the digester.

Digester Heat Exchanger:
The heat contained in the hot water produced by the boiler and/or the CHP heat exchanger is transferred to the digester to ensure that the inner temperature is maintained at its optimal operating set point to produce biogas.

Capstone Green Energy Corporation is a leading provider of customized microgrid solutions and on-site energy technology systems focused on helping customers around the globe meet their carbon reduction, energy savings and resiliency goals.

Capstone Green Energy focuses on four key business segments. Through its Energy as a Service (EaaS) business, it offers rental solutions for its microturbine energy systems and battery storage systems as well as aftermarket parts and comprehensive service contracts through a comprehensive Factory Protection Plan (FPP) product. Energy Generation Technologies (EGT) are driven by the company's industry-leading, highly efficient, low-emission, resilient microturbine energy systems offering scalable solutions in addition to a broad range of customer-tailored solutions, including hybrid energy systems and larger frame industrial turbines Baker Hughes. The Energy Storage Solutions (ESS) segment designs and installs microgrid storage systems creating customized solutions using a combination of battery technologies and monitoring software. Through Hydrogen Energy Solutions (H&S), Capstone Green Energy offers customers a variety of hydrogen products, including the company's microturbine energy system.

Our vision is to become a leader in the battle against climate change. We will accomplish this by offering our proven, advanced green energy power solutions. We are committed to protecting the environment and the people who live in it, believing that the world we leave behind for our children and grandchildren should be better than the world in which we live today.

As an organization, we have a moral duty to behave ethically. We strive to be honest and forthright in all actions within our organization and externally relative to our environment, our society, our customers, and our shareholders.

For more information about Capstone Green Energy and its clean-and-green microturbine technology solutions, please visit www.capstonegreenenergy.com or call 1.818.734.5300.

Call us (toll free) 1.866.422.7786 | Tel: 1.818.734.5300 | www.capstonegreenenergy.com

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