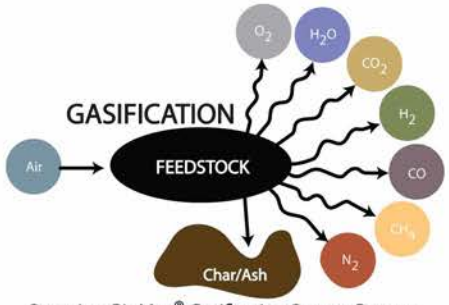


Overview BioMax® Gasification System Process

BioMax® Systems' Benefits: BioMax® Systems are fully automated, environmentally friendly, modular, biopower systems that are transportable, built and tested in a factory, and very easy to site. BioMax® Systems use a highly advanced proprietary design, down-draft gasifier, giving end-users significant benefits including:

Feedstock Flexibility. BioMax® Systems make syngas that consists of hydrogen, carbon monoxide and nitrogen by processing low-value carbon feedstock such as wood chips, nut shells, stone fruit, pits, scrap lumber, etc. BioMax® Systems can also process other waste streams by briquetting or pelletizing waste into a gasifable feedstock.

Product Flexibility. BioMax® Systems typically generate electricity and heat in a highly efficient combined heat and power (CHP) mode, but can also use the syngas to fire boilers and industrial dryers, or to power engines that run shaft power like water pumps, etc. The syngas can often times be substituted for or blended with other fuels.

Emissions. The BioMax® Systems meet EPA emissions standards and the emission requirements in most European countries and in states, such as California, that have higher emissions standards than the EPA. Depending on the feedstock, the char and ash produced can be used as a soil amendment. The BioMax® Systems do not use or make water, and meet stringent $PM_{10}$ and $PM_{25}$ particulates standards and most local noise requirements.

Economics. Today, the BioMax® Systems compete effectively with fossil-fuel based prime movers and the electric grid in high-cost energy markets, as well as wind and solar. systems. Since a wide variety of biomass can be processed in the BioMax® Systems, end-users with their own supply of feedstock can save money on disposal costs, and in some cases, avoid related environmental fees.

## About CPC

CPC is a wholly-owned subsidiary of the Afognak Native Corporation and is the world's leading small modular biopower corporation. Its headquarters are in Englewood, Colorado.

CPC was founded in 1995 and started work in modular biopower in 1999. CPC was the first company world-wide to:

(1) Deploy automated, modular biopower systems capable of operating unattended in Energy Services Company (ESCO) applications.
(2) Manufacture complete, turn key modular biopower systems in standard ISO containers.
(3) Develop on-site energy independence solutions that can produce power, heat and cooling.
(4) Develop a modular syndiesel plant.

## About Afognak Native Corporation

Afognak Native Corporation, the parent company of CPC, is an Alaska Native Corporation formed under the Alaska Native Claims Settlement Act, a 1971 settlement between the US government and Alaska's indigenous peoples. Afognak Native Corporation's shareholders are the indigenous people of Afognak Island. Shares cannot be bought, sold or traded.

Profits earned by the business ventures are returned for the benefit of the shareholders and their Native community, providing dividends and job training, scholarships and funding social services and cultural presentation programs.

In 2011, Afognak acquired the Community Power Corporation, the world's leading small-modular biopower company. The acquisition leverages Afognak's and its wholly-owned subsidiary Alutiiq, LLC's expertise while expanding business activities in the energy industry.

For additional information on CPC, the BioMax® Systems or gasification please contact:

**Community Power Corporation**
**14800 Grasslands Drive**
**Englewood, Colorado 80112**
**Phone: 303.872.2311**
**CustomerRequests@goCPC.com**

 www.goCPC.com v1..02

Community Power Corporation
A Wholly Owned Subsidiary of Afognak Native Corporation

# PRESENTS
# THE BIOMAX® SYSTEM

## A BRIEF OVERVIEW OF GASIFICATION

Community Power Corporation
**14800 Grasslands Drive**
**Englewood, Colorado 80112**
**Phone: 303.933.3135**
**www.goCPC.com**

***"In 1945, approximately 1,000,000 vehicles operated using gasifier Producer Gas"***

## What is Gasification?

Gasification is a thermo-chemical process that CPC uses to convert carbon-rich, biomass feedstocks into a clean syngas containing equal amounts of hydrogen and carbon monoxide, a small amount of methane and the balance nitrogen. CPCs proprietary BioMax® Systems are fully automated systems that use software to precisely control the material flow, gasification, gas cooling and filtration to produce extremely clean syngas.

Unlike thermal energy derived from incineration of organic feedstocks, the BioMax® Systems' syngas is a clean burning renewable fuel gas that can be used as a substitute for gasoline, natural gas, fuel oil or propane. The BioMax® Systems' syngas can be further processed into a number of chemical products including synthetic diesel, jet fuel and more.

## History of Gasification

The process of converting energy by gasifying organic material has been around for more than 180 years. During much of that time, coal and peat were the primary fuels used to power gasification plants.

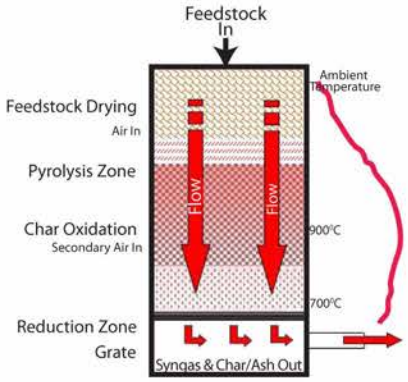
Initially in the US, gasification technology was used to produce gas from coal or coke for municipal lighting and cooking. By 1850, the major cities of the world had "gaslight." About 1880, the internal combustion engine was invented and "Producer Gas" was used to make electricity. Eventually, natural gas pipelines displaced the municipal plants.

Gasification became popular again during the world wars, especially World War II when gasoline became scarce. Wood gas generators helped to power about a million vehicles world-wide.

*Adler Diplomate 3 with Gas Generator*
*Duetschen Museum - Photographer Mattes*

In the late 1990s the Department of Energy contracted CPC and three other companies to develop a new generation of small modular biopower systems. CPC was the first to deploy a system under the program and is the world leader in small modular biopower systems.

## Gasification Chemistry




**GASIFIER SCHEMATIC**

In the downdraft gasifier used by CPC the organic feedstock goes through several different thermo-chemical processes:

- Dehydration or drying. The feedstock, if needed, is dried before the gasification process and the moisture extracted is used in later chemical reactions.
- Pyrolysis. Next, organic materials are thermo-chemically decomposed at elevated temperatures in the absence of oxygen releasing volatiles and producing char. This prepares the chemically changed feedstock for combustion.
- Combustion. A carefully controlled burn using small amounts of air allows the volatiles and the char to react with the oxygen to form primarily carbon dioxide, water and trace amounts of carbon monoxide. The heat created in the process is used in the gasification process.
- Gasification. In this step, the char reacts with the carbon dioxide and the steam produced in previous steps to form carbon monoxide and hydrogen.
- Equilibrium. A chemical reaction known as the "water gas shift reaction" helps to balance the carbon monoxide, steam, carbon dioxide and hydrogen in the gasifier establishing a chemical equilibrium during the final step of the process.

The gasification process is not incineration. Incineration is simply burning. The output is mainly carbon dioxide and heat plus toxic materials that may have been present in the materials. Gasification targets non-toxic carbonaceous feedstocks and the output is clean fuel gas that can be used to make electricity, heat and liquid fuels.

The BioMax® 100 (kW) Modular Biopower System

## Current Gasification Technologies

There are five basic gasifier technologies currently in commercial use:

- "Down Draft" Fixed Bed. In this technology, the oxidizing agent (steam, oxygen and/or air) flows through the feedstock in the same direction as the feedstock is moving through the gasifier. The fuel gas exits the gasifier at a high temperature, and since all tars pass through a very hot bed of char as the gas exits, tar levels are fairly low. A highly advanced proprietary down-draft gasifier is the "heart" of all BioMax® Systems.
- "Up Draft" Fixed Bed. The up draft gasifier is essentially the same design as the down draft, except the oxidizing agent flows in the opposite direction of the feedstock. Throughput for this type of gasifier is relatively low. Gas exit temperatures generally result in the gas needing extensive cleaning because the process produces large quantities of tar.
- Fluidized Bed Reactor. Granulated feedstock is used in this process and it becomes fluidized with the introduction of the oxygen or air. Fuel throughput is higher than the fixed bed, however, the tar levels can be higher and conversion efficiencies can be rather low.
- Entrained Flow. This technology uses atomized, pulverized, dry feedstock which is usually processed with pure oxygen and not air. The process requires high temperature and pressure. It is used primarily for high volume processing.
- Plasma. High voltage, high current electricity is passed through electrodes creating an electrical arc. An inert gas passes through the feedstock and the arc breaking the feedstock into a fuel gas. This gasification method operates at very high temperatures and can process any kind of waste. This technology is often used in chemical production.