

2009 Annual Industry-Environment Conference

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The Saratoga Hilton*

*Session 8
Natural Gas Exploration and Alternative Fuels*

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It's As Easy as A – B - C

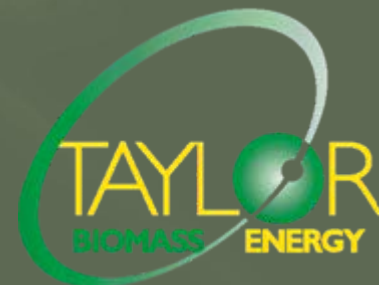
- ❖ *A - Sort, separate, and recycle*
- ❖ *B - Gasify to a MCV syngas*
- ❖ *C - Produce renewable energy products*
 - *Power*
 - *Liquid fuels*
 - *Natural gas replacement*
 - *Biobased chemicals*
 - *Hydrogen*

How Can Residues Become Useful Biomass Feedstocks?

- ❖ *Sorting, separating and recycling a mature technology for Taylor*
 - *97% of C&D materials become useful products*
- ❖ *W.T.C. Experience*
- ❖ *Ongoing operations in Montgomery, NY*

Potential Supplies of Residue Materials

- ❖ *Construction and Demolition Wastes (C&D)*
- ❖ *Municipal Solid Waste (MSW)*
- ❖ *“Green Waste”*
 - *Tree trimmings*
 - *Yard wastes*
 - *Land Clearing Debris*



Fractions of Waste Materials

- ❖ *Recyclables*

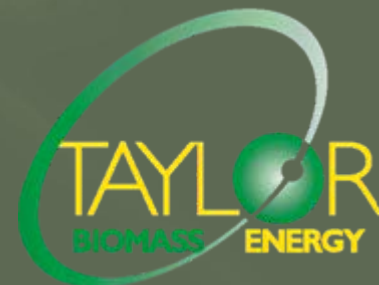
- *Stone, metals, glass, paper*

- ❖ *“Biomass” (Fuel) Components*

- *Wood, organic residues, food, leather, plastics, carpeting, synthetics*

- ❖ *Hazardous*

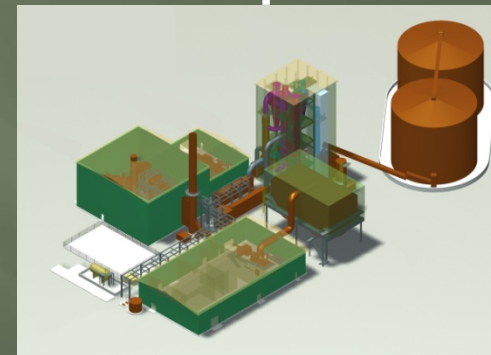
- *Pesticides, cleaners, medical, pressure treated lumber, painted lumber*



Operations in Montgomery, New York



*Converting Residual Materials
Into Useful Products*



Gasification Provides Many Advantages

- ❖ *State-of-the-art based on stoker boilers*

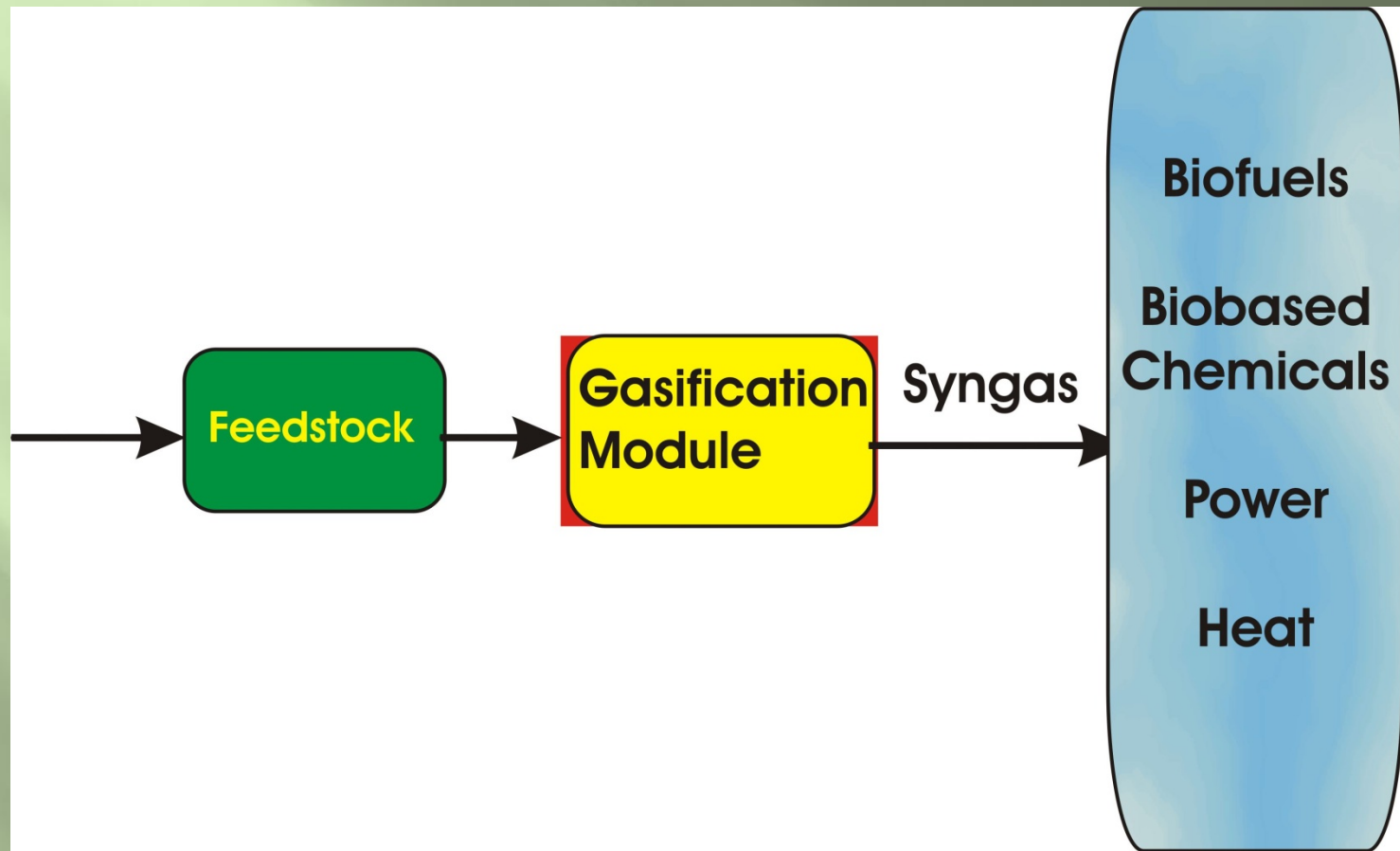


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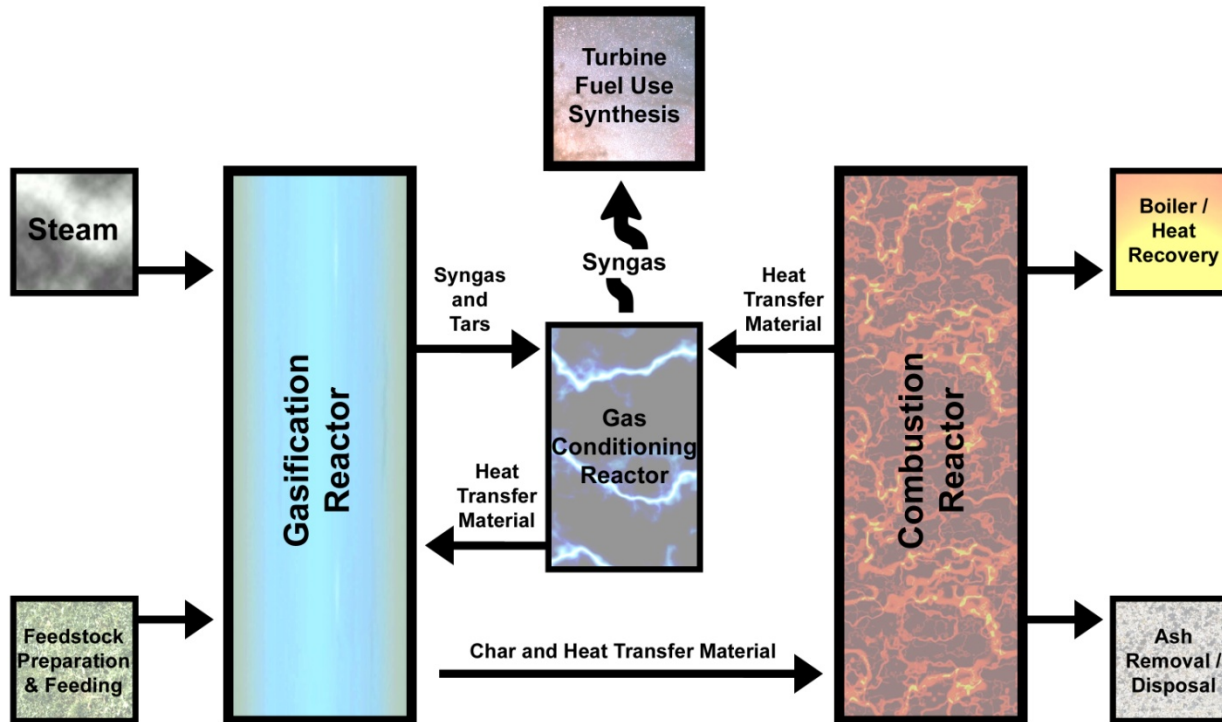


- ❖ *Low efficiency, High cost*
- ❖ *Intolerant of contamination*
 - *Chlorine*
 - *Alkali*

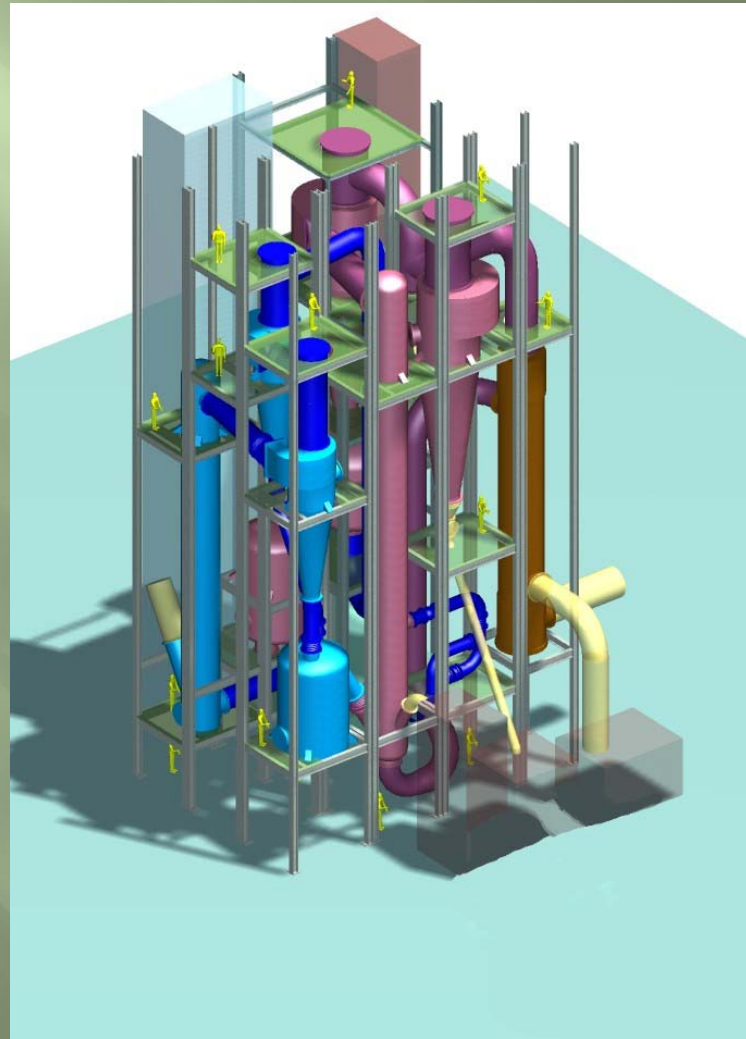
Conversion to Medium Calorific Value Syngas Provides a Range of Options



The Taylor Biomass Gasification Process



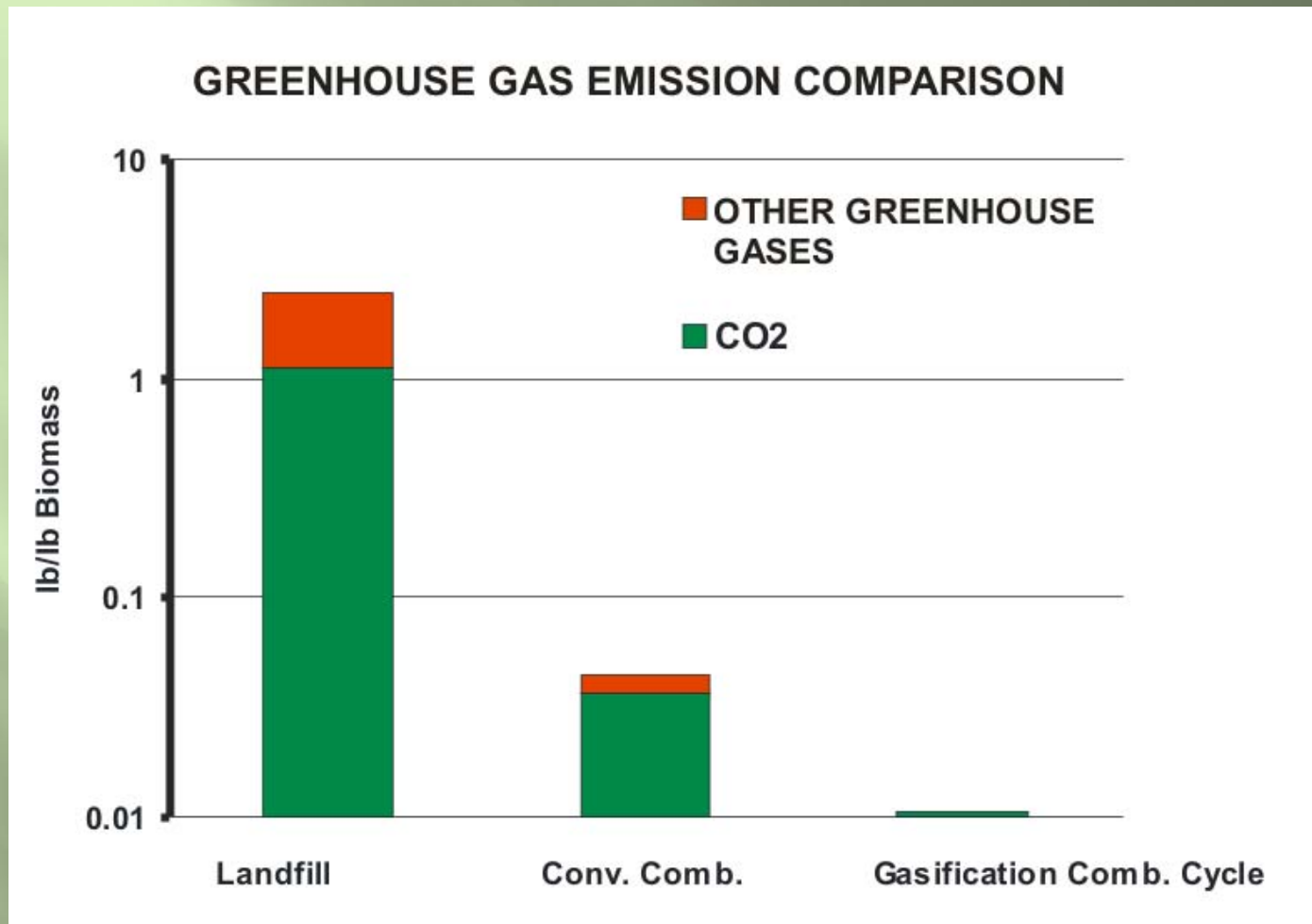
Modular Construction Provides Compact Size



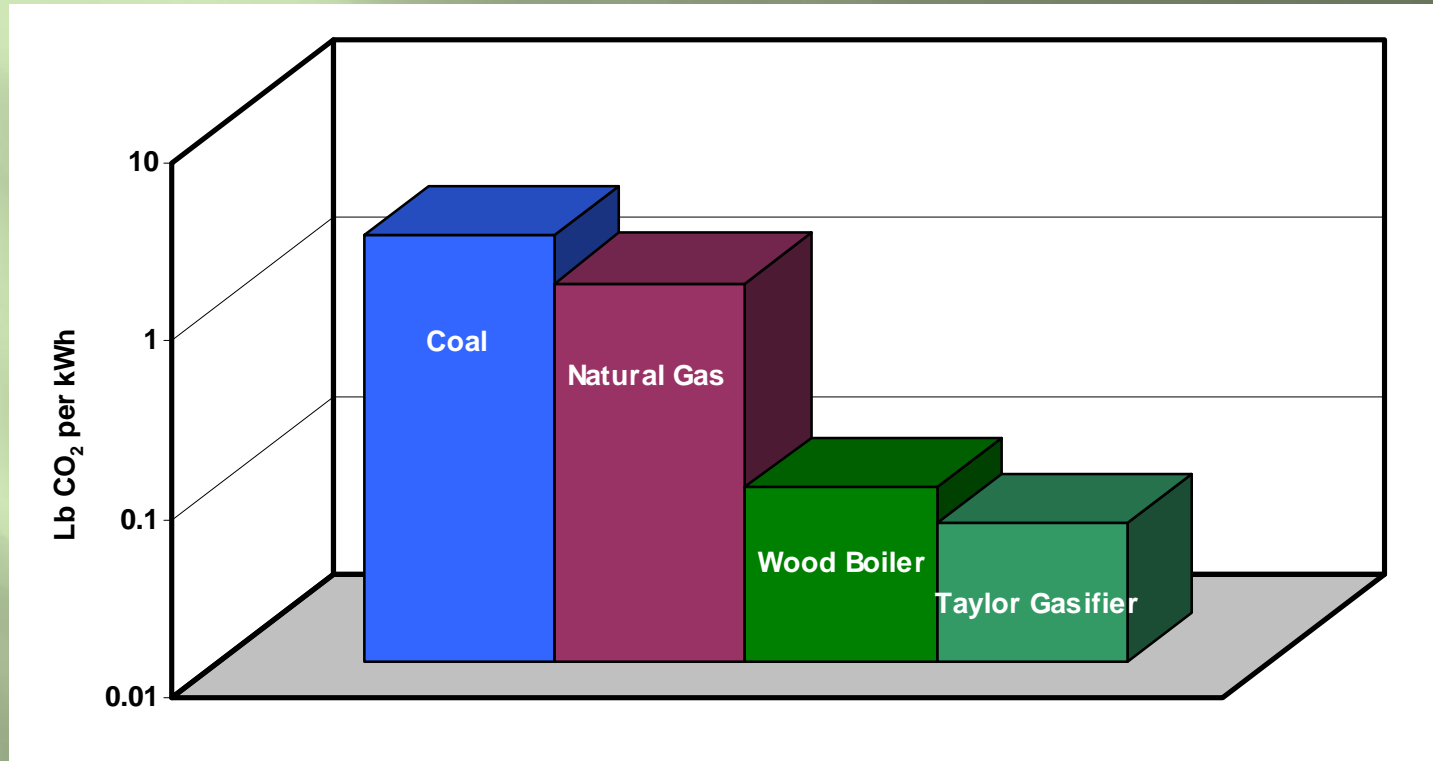
Characteristics of the Taylor Process

- ❖ *MCV gas without oxygen*
- ❖ *Stable gas composition*
- ❖ *Atmospheric pressure process*
 - *Simplifies feeding*
 - *Expands range of acceptable biomass*
- ❖ *Allows use of solid biomass as a gas turbine fuel*
 - *High process efficiencies to power*

Eliminating Landfill Disposal Provides Substantial Greenhouse Gas Reduction



A Significant Reduction in Greenhouse Gases Compared to Fossil Fuels



Programs Underway to Utilize the Taylor Gasification Process

- ❖ *Montgomery, NY*
 - *MSW + C&D Material*
 - *Modular gasification facility*
 - *Process systems for liquid fuel + hydrogen production*
 - *24 MW Combined Cycle system*
 - *Sell green energy to NY grid*
- ❖ *Alberta, Canada*
 - *24 MW Combined Cycle system*
 - *Hog fuel / residuals*
- ❖ *Maryland*
 - *Synthesis to FT liquids*

Potential System Layout

