Renewable Energy Solutions Education & Technologies
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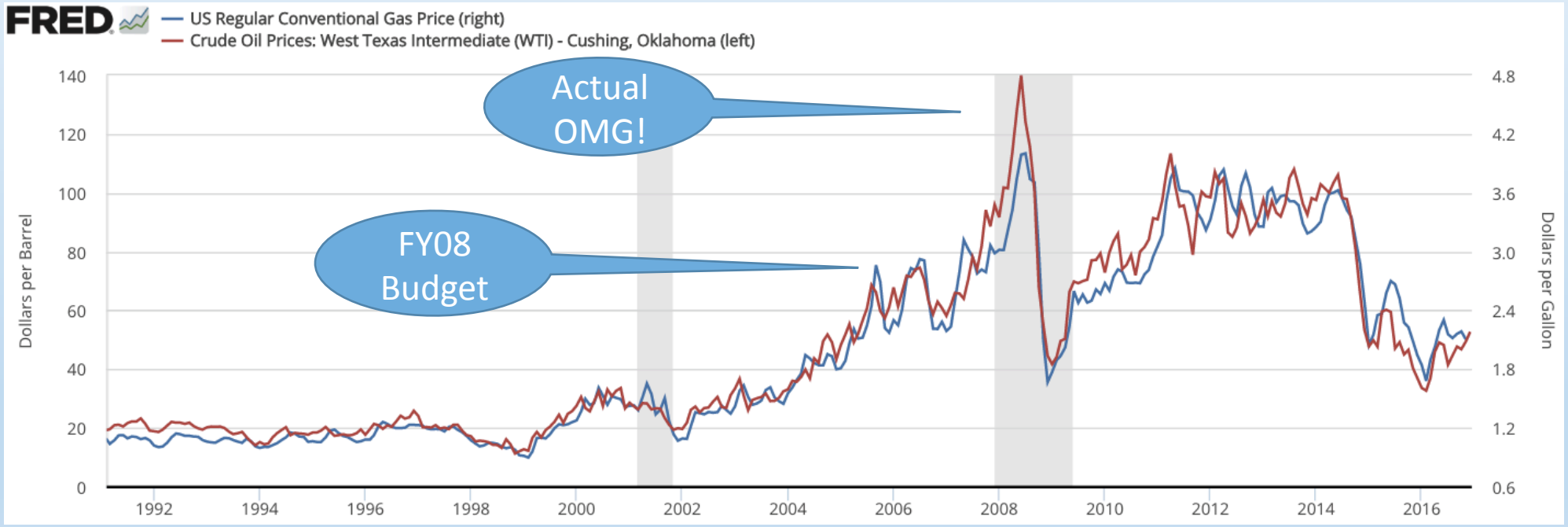
THERMAL ENERGY SYSTEMS RESILIENCE IN COLD/ARCTIC CLIMATES CONSULTATION FORUM
Delta Mine Training Center dba

Brief History

From mining to wood gas

2007 -2008 Energy Crisis



Problems

- Energy is expensive in Alaska
- Transporting liquid fuel can be dangerous and difficult
- Wood smoke causes air pollution
- Burning wood is primarily limited to space heat
- Centralized energy sources are controlled by others and are vulnerable to cost increases and supply shortages

Solutions

???

North American Boreal Forest

The Gulf of Mexico is approximately 400 million acres, the Boreal forest is 1.5 billion acres

Think about the energy, consider the potential…..

A bit about wood gas (Syngas)

SOME FACTS:

- Heated wood releases gases
- Some of the gases are combustible
- Some of the substances do not burn

Refining the process

When tar gases are exposed to very high temperatures like 1000 degrees Celsius (1832 degrees F) their carbon bonds break apart. This is called “cracking.”

The Result….

Hydrogen,

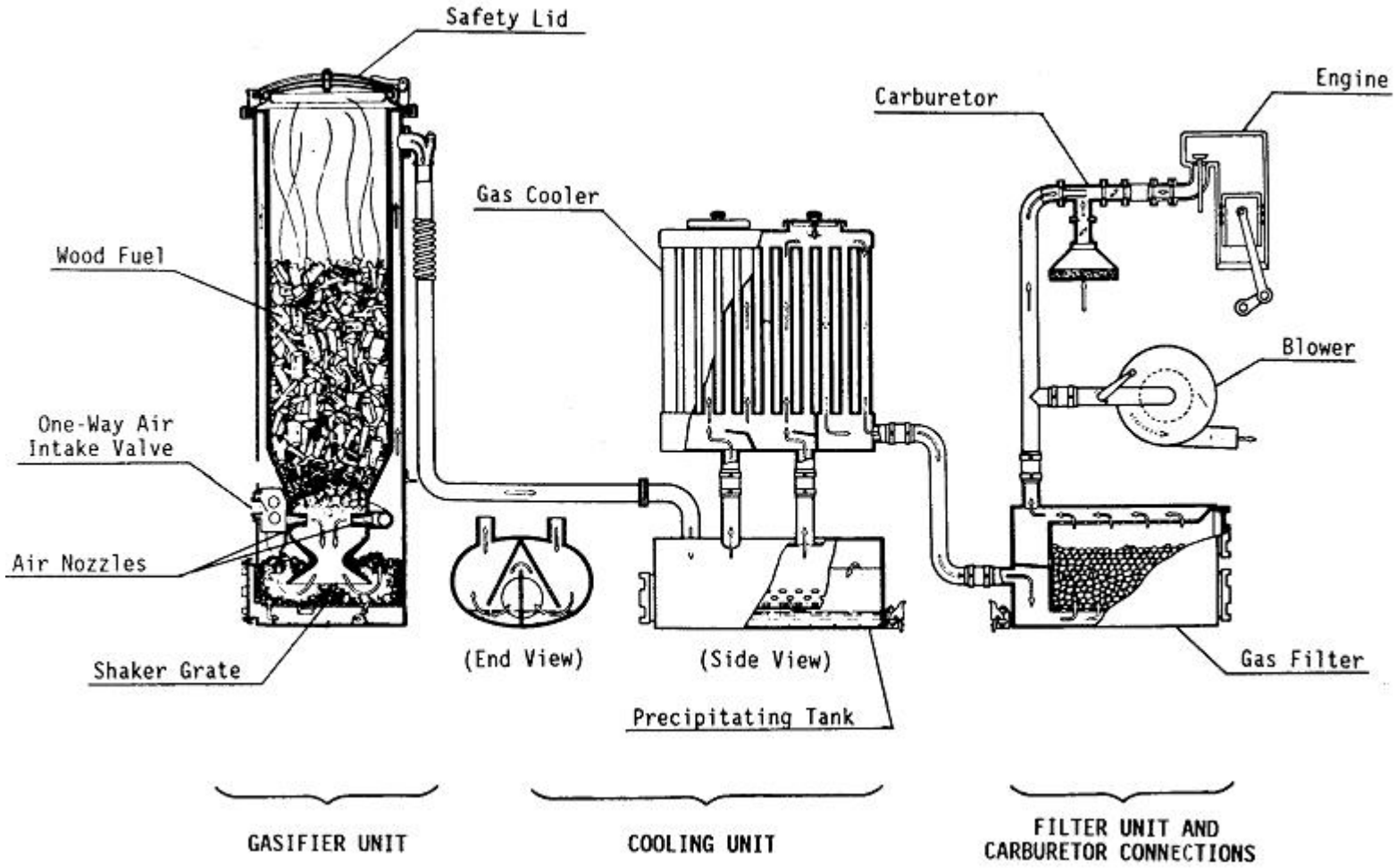
Carbon Monoxide

&

Methane

The Gasifier

Georges Imbert and FEMA



GEK and Wayne Keith Gasifiers

Our Prototype

The Concept

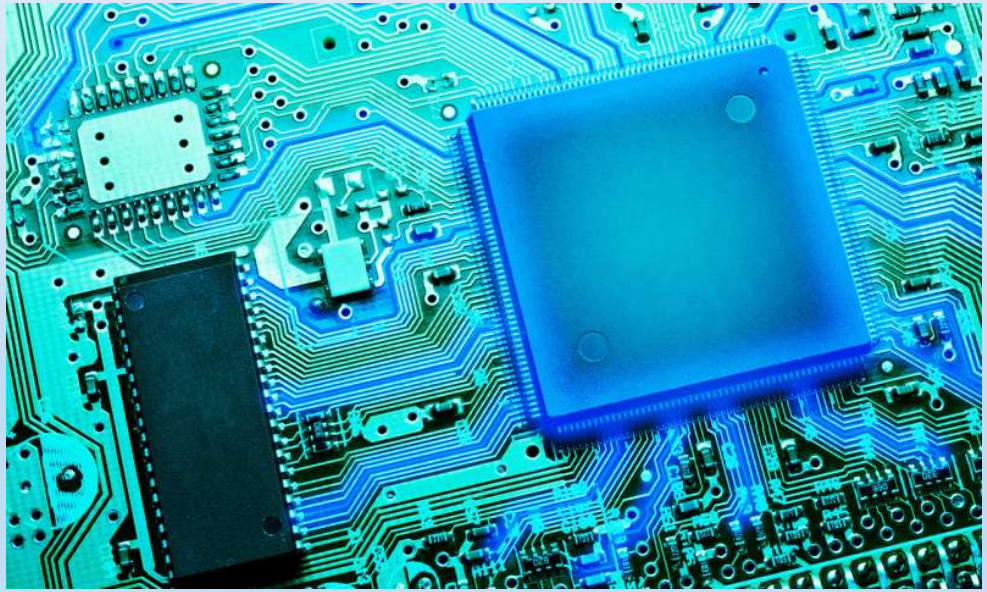
- Reduce the need for nonrenewable sources of fuel
- Integrate fuels for least cost heat and power
- Expand the uses of woody biomass and trash for current combustion systems
- Make energy production a household process

The Goal

- Bolster energy independence for all people

So How?

More for less – the microprocessor



Work to be done

1. Test energy value of the syngas produced by the RESET gasifier.
2. Analyze the emissions from combustion of the syngas for particulates and other pollutants.
3. Determine the efficiency of converting various types of wood and other solid fuel sources to syngas.

www.renewableenergysolutions.org

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