Agenda

- Company overview
- Explain Air Curtain Technology
- Problems with wood and vegetative waste
- Air Burners approach to Biomass energy
- BioChar production from our machines
- Largest manufacturer of Air Curtain Burners
- In business over 20 years
- Primary manufacturing in Palm City, Florida
- Our machines are on every continent except Antarctica
- 15 Different models of Air Curtain Burners
Air Curtain Technology

How does it work?
Air Curtain is a Pollution Control Device

Like a Scrubber, Air Curtain machines do not burn anything, they just control the emissions from something burning.
Horizontal Air Curtain
Creates secondary burn chamber

1. High velocity curtain (4) traps particles under the curtain
2. Particles under curtain (5) are reburned
Air Curtain Burner

Actual Comparison Testing To Open Burning

Open Burning
20 tons of waste

Air Curtain Burning
20 tons of waste

Environment Canada
Air Curtain Burner

Environment Canada

Particulate Matter release for 20 tons of wood waste

Air Curtain Burners
20 tons of wood waste eliminated in 1 hour

Open Burning
20 tons of wood waste burning for 48 hours
**Primary Purpose**
Controlling Particulate Matter – Smoke – Black Carbon

**Proven Technology**
Well tested technology in the US and other countries
Air Burners, Inc. is a proud CRADA partner with the USEPA and the USDAFS
Why is Veg Waste an important issue?

- Approximately 20 percent of the World’s waste is vegetative (World Bank)

- There are very few opportunities to recycle vegetative waste

- Most Numbers on vegetative waste do not include Tree Mortality
We are losing the battle in the US
We need more options

US collected green waste 50M Tons
Recycling less than half
Does not include:
  Tree Mortality
  State and National Parks
  Agriculture
  Invasive species

The Mulch and Compost markets are currently over supplied
Tree Mortality is a major issue

Total collected Vegetative waste in the USA is **50** million tons (USEPA 2014)

Sierra Nevada Mountains Tree Mortality
102 million dead standing trees
800 million tons (USFS 2016)
A New Design Approach for Biomass Energy
Air Burners Priorities in Biomass Power Generation

#1 - Eliminating Wood and Vegetative Waste

#2 - Make electrical and thermal energy
Difficulties with Biomass Energy Today

Inefficient waste elimination option

- Systems are designed to extract maximum energy from veg waste

High preprocessing costs and environmental impact

- Most systems require double grinding as preprocessing
Most common veg waste disposal method is Grind and Haul to landfill.
Same grinding process is needed for most Biomass power systems.
The Difficulties

Current Biomass Processing

- Expensive
- High Emissions
- Supplemental fuel
- High capital costs
- Permanent structure
- Focus is on efficient energy production not waste elimination
PGFireBox
- No processing
- Whole logs and root balls
- No supplemental fuels
- Movable system
- Lowest emissions
- Easy installation
- Focus is on waste elimination with energy production as an added benefit
Our Approach

Combines Air Curtain Technology and ORC

ORC = Organic Rankine Cycle
PGF100 – 100kW

100kW Electrical
1 MegaWatt Thermal
PGF500 – 500kW

500kW Electrical
2.5 MegaWatt Thermal
PGF1000 – 1 MegaWatt

1 MegaWatt Electrical
5 MegaWatt Thermal
What are the advantages of this system?

Lowest environmental impact
Easy placement, not a permanent structure
High throughput compared to other schemes
Can be relocated to accommodate the “waste travel zone”
No supplemental fuels needed
It’s a machine not a building, easier finance and resale
No expensive pre-processing operations like grinding/sorting
Ideal support for “Distributed Power Generation”
100kW Electrical
1 MegaWatt Thermal
Heat and Power

Eliminate 7 tons per hour

Generate 100kW electricity

Generate 1 MW Thermal Energy

Up to 10 CY of BioChar per day

MSRP $860,000 USD
PGF100
100 kW system
Self-Powered system
20 Tons per hour burning
Power for all three FireBoxes
Not a permanent structure
No grinding or preprocessing
MSRP $933,000 USD
BioChar Production Air Burners Customer in the Southern US
- Averaging 10 Cubic Yards per day using a Model S327 FireBox
- Sell through a broker, $120 for 1 cubic yard
- Market varies throughout the country
- Most of our customers can sell 25% to 75% of their BioChar

1 Rake out the ash
2 Quench with water
3 Screen to size
4 Bag and ship
Closed Circle Recycling

- 1 Megawatt PGF in the center eliminating waste and generating power
- Power is distributed to other waste recycling machines
- Lowers production cost of recycled product
- Does not consume any outside power
LAST SLIDE

THANK YOU

www.AirBurners.com