

AIR BURNERS, LLC

“Simple Fact Sheet Series”

MARKETS WE SERVE

The typical markets for our equipment include:

1. Land Clearing

This is where we began; our equipment was designed to support the clearing of clean wood waste (vegetative waste)

2. Landfills

Our machines are used for the reduction of mass into the landfill, generally wood waste and building and demolition debris

3. Forest Service

Forest maintenance and clearing. Forest fire prevention (fuels reduction) and post fire clean-up

4. Wood Products

Manufacturing

Lumber mills, pallet and furniture companies: wood waste reduction

5. Disaster Recovery

Storm & flood clean-up, diseased tree disposal, diseased animal disposal



Citrus Tree Disposal by S-217 in South Florida

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MARKETS WE SERVE (Con't)

I. LAND CLEARING

LAND CLEARING OPERATIONS

- Trench Burners or Fire Boxes can be used for burning land clearing debris.
- Air Burners invented and patented these machines over 30 years ago.
- High through-put means less time on the job.
- Low capital investment, machines price range \$25,000 to \$105,000.
- Green trees are fine no drying time is required.
- Most root balls can go in whole no splitting required.

ENVIRONMENTAL

Air Quality

Open burning averages 60% to 80% opacity (smoke plume); Air Burners average 10% opacity. Air Burners can be used in closer proximity to existing structures.

High mass reduction decreasing the load on local landfills

S-Series machines have a 95 to 98 percent reduction rate so 20,000 lbs. of wood waste will reduce to between 400 and 1,000 lbs. of ash.

Reduced transportation, less dust and engine emissions

Our machines have thru-put rates of between 2 and 15 tons per hour depending on machine size. As an example if you clear at a rate of 8 tons per hour, using a chipper you would make approximately 7 trips to the landfill each “day,” using the Air Burner you might make 1 or 2 trips a “week” to the landfill.



S-217 at Land Clearing Site in Florida

ECONOMICS

No landfill fees

At a rate of 8 tons per hour of clearing the average landfill fee is \$320 per hour (8 tons at \$45 per ton) an 8-hour day would cost \$2,560.00 and 5 to 7 truckloads. At the same rate of 8 tons per hour the Air Burner would generate an average of 700 lbs. of ash. If the ash had to go to a landfill an 8-hour day would cost \$126.00 and one truckload. The Air Burner delivers a savings of more than \$2,434.00 per day.

Less time (labor) than open burning

At a rate of 8 tons (26.6 cu yards) per hour of land clearing per day (600 lbs. per cubic yard) you would generate an open burn pile that would be approximately 10 feet long by 10 feet wide by 7 feet high every hour, or in one day the pile would be 40 feet by 20 feet by 7 feet high.

An Air Burner model S-321 could burn this pile down to 700 lbs. of ash in approximately 9 hours. Open burning would take approximately 24 hours and would require constant managing.

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2. LANDFILL

LANDFILL OPERATIONS

- Natural alternative for reduction of clean wood waste. As in nature the Air Burners uses only wind and air for efficient combustion.
- High efficiency burn, a true mass reduction in waste means less to landfill.
- High thru-put means less decomposing, which means less methane production.
- Heat recovery option allows warming leachy ponds during cold periods.
- Ash can be used for PH balancing
- Low capital investment, machines price range \$25,000 to \$105,000.
- Green trees are fine no drying time is required.
- Reduction of green waste can increase landfill operating life.

ENVIRONMENTAL

Air quality

Wood waste produces, amongst other things, methane during decay. The Air Burner does not produce any methane. The combustion process in an Air Burner is very efficient using the air curtain to trap smoke particles. The emissions from the Air Burner are stated in the Technical Reports. Open burning averages 60% to 80% opacity (smoke plume); Air Burners average 10% opacity.

High mass reduction decreasing the load on local landfills.

S-Series machines have a 95 to 98 percent reduction rate so 20,000 lbs. of wood waste will reduce to between 400 and 1000 lbs. of ash. Reduction of wood waste in to the landfill will help to extend the landfills life.



S-116 - Full Operation at Alabama Landfill

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LANDFILL (Con't)

ECONOMICS

Low Capital Investment

Our machines range in price from \$25,000 up to \$105,000.
Our machines have an expected operating life of between 5 and 10 years.

Low Daily Operating Costs

Maintenance costs are less than \$3.40 per hour of operation.
One person is all that is required for daily operations.

High Thru-Put

We have machines with thru-put capacities ranging from 1 ton per hour up to 15 tons per hour.

Daily Cost Savings

Most landfills cannot sell-off all the grindings from wood waste. Therefore if you multiply the daily amount (tonnage) of leftover wood waste (or grindings) that goes into the landfill, by 98 percent this will give you the amount (tonnage) that can be reduced in the Air Burner. If you then multiply that amount by your cost per ton to landfill you will have the daily savings an Air Burner machine can deliver to your operations.

(Left over wood waste, tons) x 98% = ?? tons

(?? Tons) x (landfill per ton cost) = gross cost savings

8 tons per hour x 8 hour day = 64 tons delivered

64 tons x 98% = 62.7 tons consumed in the Air Burner

62.7 tons x \$10 per ton operating cost = \$627.00 per day savings

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3. FOREST SERVICE

FOREST SERVICE OPERATIONS

- Used for Fuels Reduction, Post Fire Clean up.
- Added control aids communities in Urban Interface Management.
- Good containment, could be used in High Fire Danger areas.
- Trench Burners or Fire Boxes can be used for burning land clearing debris.
- High thru-put means less time on the job.
- A true reduction in waste means lower transportation costs.
- Low capital investment, machines price range \$25,000 to \$105,000.
- Green trees are fine no drying time is required.
- Most root balls can go in whole no splitting required.

ENVIRONMENTAL

Air Quality

Open burning averages 60% to 80% opacity (smoke plume); Air Burners average 10% opacity. Air Burners can be used in closer proximity to existing structures. Forest Impact

Dropping of slash and clearings has a biological impact on the forest floor. There is generally enough natural dropping to support the ecosystem without adding man made droppings.

High Mass Reduction

- Decreasing the load on local landfills or impact on forest floor.
- S-Series machines have a 95 to 98 percent reduction rate so 20,000 lbs. of wood waste will reduce to between 400 and 1,000 lbs of ash.
- Reduced transportation, less dust and engine emissions
- Trench Burners or Fire Boxes can be used for burning land clearing debris.
- Our machines have thru-put rates of between 2 and 15 tons per hour depending on machine size



S-116 - Full Operation at Lake Tahoe, California

ECONOMICS

- No Landfill Fees
- At a rate of 8 tons per hour of clearing the average landfill fee is \$320 per hour (8 tons at \$45 per ton) an 8-hour day would cost \$2,560.00 and 5 to 7 truckloads. At the same rate of 8 tons per hour the Air Burner would generate an average of 700 lbs. of ash. If the ash had to go to a landfill an 8-hour day would cost \$126.00 and one truckload. The Air Burner delivers a savings of more than \$2,434.00 per day.
- Less time (labor) than open burning
- At a rate of 8 tons (26.6 cu yds) per hour of land clearing per day (600 lbs per cubic yard) you would generate an open burn pile that would be approximately 10 foot long by 10 foot wide by 7 feet high every hour, or in one day the pile would be 40 feet by 20 feet by 7 feet high. An Air Burner model S-321 could burn this pile down to 700 lbs of ash in approximately 9 hours. Open burning would take approximately 24 hours and would require constant managing.



S-116 at Forest Lakes, Arizona,
Urban Wildland Interface Slash Collection & /Disposal Site
(Operator Certification: January, 2002)
F.R.E.D.S.
(Fuel Reduction Eradication Disposal Site)

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4. WOOD PRODUCT MANUFACTURING

WOOD PRODUCTS INDUSTRY

- A true reduction in waste means lower waste disposal costs.
- Low capital investment, machines price range \$25,000 to \$105,000.
- Green trees and off-cuts are fine no drying time is required.

ENVIRONMENTAL

Air quality

Wood waste produces xx tons per xx of methane during decay. The Air Burner does not produce any methane. The combustion process in an Air Burner is very efficient using the air curtain to trap smoke particles. The emissions from the Air Burner are addressed in a certified emissions report.

Open burning averages 60% to 80% opacity (smoke plume); Air Burners average 10% opacity. Air Burners can be used in closer proximity to existing structures.



S-116E (Electric) at Pallet Recycling Company

High mass reduction decreasing the load on local landfills.

S-Series machines have a 95 to 98 percent reduction rate so 20,000 lbs. of wood waste will reduce to between 400 and 1000 lbs of ash.

Reduced transportation, less dust and engine emissions

Our machines have thru-put rates of between 2 and 15 tons per hour depending on machine size. As an example if you ran 8 hours at 8 tons per hour you would make approximately 7 trips to the landfill.

ECONOMICS

Low Capital Investment

Our machines range in price from \$25,000 up to \$105,000.

Our machines have an expected operating life of between 5 and 10 years.

Low Daily Operating Costs

Maintenance costs are less than 30¢ per hour of operation.

One person is all that is required for daily operations.

High Thru-Put

We have machines with thru-put capacities ranging from 2 tons per hour up to 15 tons per hour.

No landfill fees

At a rate of 8 tons per hour of wood waste the average landfill fee is \$320 per hour (8 tons at \$45 per ton) an 8-hour day would cost \$2,560.00 and 5 to 7 truckloads. At the same 8 tons per hour the Air Burner would generate an average of 700 lbs of ash. If the ash had to go to a landfill an 8-hour day would cost \$126.00 and one truckload. The Air Burner delivers a savings of more than \$2,434.00 per day.

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5. DISASTER RECOVERY

Our machines have been used for disaster clean up all over the world.

- We are recommended by more governments and government agencies than any other machine manufacturer.
- On site clean up after storms when mobility is most difficult.
- On site destruction of diseased trees to prevent further spread of disease.
- On site destruction of diseased animals.
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Hurricanes, tornadoes, floods, earthquakes, fires and large-scale catastrophic animal disease occurrences cause multiple problems for the affected authorities. Their first order of concern and responsibility is to save lives and protect property, but immediately following are disaster recovery efforts.

They are first aimed at re-instating basic services and the protection of the public health, and the second phase of recovery deals with debris clean up and infrastructure restoration and rebuilding



Four S-321& S-116 Units at Disaster Recovery

Air Burners systems have played important roles in both phases for many disasters that have struck during the last thirty years and are an integral part of many disaster recovery contingency planning on local, state and federal level, especially within hurricane/tornado and “homeland security” preparedness programs. Some Air Burners, LLC disaster recovery examples are:

- Hurricanes Andrew and Floyd storm debris clean-up
- Foot-and-Mouth eradication schemes (carcass disposal) in the United Kingdom
- Ice storm tree debris disposal in Missouri or Kansas
- Tornado tree and structure debris clean-up in Oklahoma

Air Burners, LLC air curtain incinerators or burners were designed to efficiently reduce wood waste material based on the air curtain burner principle. Their use in the land clearing & construction industries has long been established, and it is the first market served by Air Burners, LLC more than thirty years ago. The success in this area has evolved into their acceptance by the forest industry in general and the US Forest Service in particular for fuels (slash) reduction and for diseased tree disposal.

Emergency management agencies have employed fleets of air curtain burners in support of hurricane disaster recovery efforts to dispose of combustible debris, especially in Florida and the Carolinas. The fact that the units are easily mobilized and set up for operation on site makes them so desirable. They can dispose of large quantities of waste in a short time at acceptably low emission rates, are cost efficient, long lasting, require little operator skill and can be operated continuously for more than a day or two. All factors that make their use very attractive for disaster clean-up work.

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DISASTER RECOVERY (Con't)

The benefit of rapid combustion with little visible smoke at very high temperatures became apparent to government officials tasked with disposing of large amounts of animal carcasses from animals that had died from catastrophic diseases or natural disasters. The portability of the refractory walled S-Series introduced in 1990 by Air Burners, LLC makes it possible to deploy the fully assembled fire box rapidly to trouble spots, especially in conjunction with Air Burners' MP-series Three-axle Trailer package. Where practical, the trailer-mounted T-Series trench burner is being used as well for on-site cadaver disposal. The smaller S-111 firebox can be helicoptered to remote locations. Wood waste is required to support the combustion of cadavers.

In the case of natural disasters, such as hurricanes and tornados, storm debris is collected to fuel the combustion of carcasses in the air curtain burner. This tends to take care of two problems at the same time. Where storm debris is not readily available, wood waste or even firewood must be secured for the carcass combustion process. In the wildland, forest slash slated for elimination by the forest services can be a practical source to support the combustion of diseased wild animals, such as elk and deer affected by Chronic Wasting Disease (CWD).

There are times when waste disposal options include methods that offer a beneficial reuse. Chipping of wood waste may appear to be one such option, but within the realm of disaster recovery, usually proves to be an unproductive and costly endeavor. Nothing is more desirable than to reduce the volume of the waste stream so significantly, that disposal of the residuals becomes a minor issue. Only on-site air curtain burner incineration offers that option with a volume reduction greater than 95-98% and a sterile residual ash that most of the time can be safely land applied solving the disposal objective once and for all without reliance on costly landfills.

Air Burners, LLC systems are being used in all phases of disaster recovery and disaster contingency planning as can be summarized as follows, where the S-Series fire boxes are always the preferred systems with Air Burners T-Series trench burners being usually the second choice.

A. Natural Disasters

(Hurricanes, Ice Storms, Tornadoes, etc.)

1st Recovery Phase:

- a Support for emergency roadway, railroad, waterway and airport debris disposal (trees, limbs, demolition debris, etc.)
- b Support for disposal of perished animals (mostly farm animals)

2nd Recovery Phase:

- a Support for wood waste and demolition debris disposal at collection sites or landfills, public parks, urban wildland (forest) interface, river beds, lake shores, etc.
- b Support for wood waste (construction debris) disposal during re-building phase of infrastructure and buildings

B. Catastrophic Animal Disease Outbreaks

(BSE, FMD, CWD, etc.) (Naturally occurring or bio-terrorism induced)

- a Animal carcass disposal on site (farms, ranches, wilderness, zoos)
- b Animal carcass disposal at central processing locations or rendering facilities (also handles routine farm mortalities)

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