

The Role of Air Curtain Burners in Wildfire Mitigation Fuel Management

by Tom M. Paolangeli

Prescribed fire programs were supported a decade ago as a sensible method of ecosystems management. The objective was to dispose of slash and forest litter by prescribed burning thereby reducing the fuel that supports wildfires. The principle of fuels reduction management remains undisputed, but prescribed burning as a method by which the fuel is eliminated in urban wildland interface areas has become questionable. The recent devastating Los Alamos, New Mexico, wildfire sprang from a prescribed burn and has caused serious reconsideration of this practice by many officials.



Open Slash Burn



Air Burners S-121

Fuel reduction is rather straightforward and litter and slash collection methods have been well established. In many cases fuel is, however, collected and piled up for removal and disposal. Traditional methods include open pile burning, chipping or grinding or even landfill disposal. These are either costly methods or, in the case of open burning, environmentally undesirable and possibly unsafe.

This was the dilemma faced by the California Department of Parks and Recreation in the Lake Tahoe region. Restrictions on open burning resulted in a two year pile of material waiting for disposal.

Dave Conger, Manager of Government Sales for heavy equipment dealer Nortrax, proposed a unique solution. Conger suggested the Parks Department purchase a portable, self-contained Air Curtain Burner manufactured by Air Burners, LLC of Palm City, Florida.

The Air Curtain Burner has a firebox lined with a refractory material. High velocity air is forced over the top of the firebox and into it, having two effects: (a) oxygen is forced into the box at a high rate causing over-oxygenation of the fire and (b) the air curtain over the top of the box acts as a lid trapping particulate matter, including smoke, which is re-combusted in the hot chamber limiting emissions and the effect of smoke. The firebox has no bottom, and the entire system is built on heavy skids. A John Deere Diesel engine powers



Air Burners S-116 in Full Operation: No Visible Smoke

a fan that provides the air volume required which is expelled through a patented air disbursement device or manifold on the upper edge of one side of the firebox.

Forest litter and slash, including tree trunks and stumps, can be burned at a relatively high rate by introducing it into the firebox by use of an excavator or front loader. Once the system has reached operating temperatures, freshly cut green wood waste may be charged into the firebox as well. In addition to burning safe and cleanly, the machines are extremely efficient, with a volume reduction of approximately 95%.



Air Burners S-116 for Fuels Reduction, Lake Tahoe, California, Sept. 2001

Conger says the machine has performed admirably. “We’ve been able to process five tons an hour with virtually no smoke. As a matter of fact, dust from the tractor doing the loading is worse than the smoke from the firebox.”

Conger says the Parks Department is very pleased. “This enables them to safely dispose of material year round, even during high risk times. Even with four fires burning within a ten mile radius, our local Fire Marshall had no qualms about letting us operate. Our goal is to get about a half dozen machines set up throughout the Park system, so that brush and refuse piles don’t get so big.”

Fuel hazard mitigation in intermix areas of wildland/urban interface also addresses measures to be carried out by home owners and their communities. Home owners are encouraged at the least and often forced by local ordinances to keep vegetative growth near their dwellings trimmed and minimized. This includes the removal of such fuel to a collection facility. Open burning of the pile of fuel is often practiced with all the attendant undesirable effects and dangers.

This was the problem confronting residents of Forest Lakes, Arizona. Located in the middle of the largest Ponderosa Pine forest in the world, Forest Lakes faces an ongoing threat of disastrous fires.

Elmer Hess, a board member of the Forest Lakes volunteer fire department, struggled to find a way to reduce the community’s fire risk. Hess is a former assistant fire chief with the Phoenix fire department with fifty years of fire service under his belt. His research and talks with the EPA (who regulate the operation of air curtain destructors) also led him to an Air



Air Burners S-116 in Full Operation (No Visible Smoke), Lake Tahoe, California

Burners machine. The machine was purchased as part of a comprehensive program funded by the Western Wildland Urban Interface Grant Program.

“The goal of the program is to make our area more fire safe,” Hess said. “The fire department and the home owners association work together. We have a complete program with education, incentives to clean up lots, then the disposal of the fuels. The Air Burner machine is the key part of this initiative.”



Air Burners S-116, View from Top while in Full Operation with No Visible Smoke, Lake Tahoe, California

Hess says the Air Burners machine has exceeded his expectations. “There’s virtually no smoke, no fly ash. We can now burn on an ongoing basis. Our only restriction is very high winds.”

Hess adds, with obvious pride, “I’ve been responsible for purchasing millions of dollars worth of fire suppression equipment, but as far as I know, we’re the first fire department to purchase a piece of fire prevention equipment. I’m real excited that we’re being pro active in fire prevention.”

For more information about Air Burners, LLC, go to www.airburners.com, e-mail Air Burners at info@airburners.com or phone 561-220-7303 or 888-566-3900.

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