

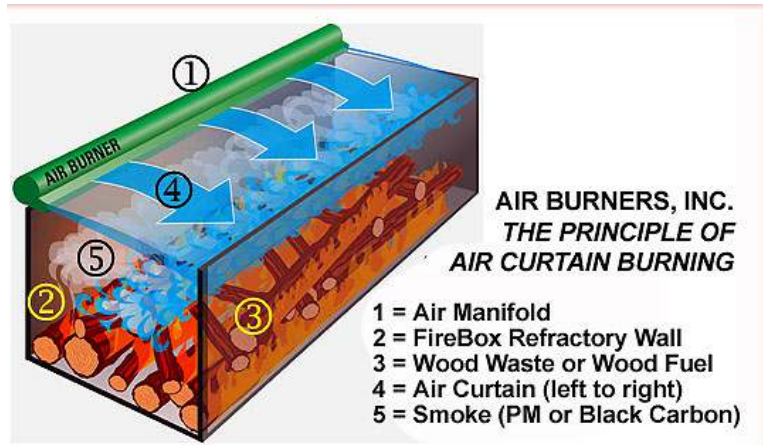


Air Curtain Principle

Air Curtain Burners were designed principally as a pollution control device. The primary objective of an air curtain machine is to reduce the particulate matter (PM) or smoke, that results from burning clean wood waste. It is sometimes hard to visualize without seeing a machine in operation, but the machines do not burn anything, rather they control the results of something burning. You could look at it as a pollution control device for open burning. Clean wood waste is loading into the FireBox, and accelerant like diesel is poured on to the wood and the pile is ignited. Very similar to starting a campfire. The air curtain is not engaged until the fire has grown in strength or the air curtain may blow the fire out. Once the fire has reached suitable strength, usually 15 to 20 minutes, the air curtain is engaged. The air curtain then runs at steady state throughout the burning operations and the waste wood is loaded at a rate consistent with the rate of burn. Our smallest machine will burn at a rate of 1/2 to 1 ton per hour, our largest machine can burn in excess of 10 tons per hour.

Principal

The purpose of the air curtain is stall or slow down the smoke particles on their way out of the FireBox. In doing this the particles are subjected to the highest temperatures in the FireBox. Stalling the smoke particles in this region just under the air curtain causes them to re-burn, further reducing their size to an acceptable limit. The result is a very clean burn with opacities well under 10 on the Ringelmann scale (as compared to open burning which typically can run at 80 to 100 on the Ringelmann scale).



Operation

You can see in the picture to the right an Air Burners FireBox completely full and burning while in the background a pile of wood is open burned

The wood pile that is open burning continued to burn for two weeks, That entire pile could have been eliminated with the FireBox in less than 2 hours.





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For proper operation, the air curtain machine has to be designed to provide a curtain of air over the fire that has a mass flow and velocity that are in balance with the potential mass flow and velocity of the burning wood waste. If the curtain velocity is too high the FireBox can become over pressurized and over agitated. The higher pressure will lift the curtain and cause it to become ineffective. The over agitation will cause embers and ash to be blown out of the box past the ineffective curtain at a significantly higher rate than normal. If the mass flow of the curtain is too low then the unburned particles (smoke) will penetrate the curtain on the high velocity of the hot gasses being generated from the burning wood.

Air Burners Machines are the most tested machines in the world. We have participated in testing programs with numerous air quality agencies. Air Burners had the honor to be selected as a CRADA partner to the US EPA. We support these testing programs as they allow us the opportunity to advance our technology and do a better job of reducing the particulates released in our air. Reducing PM is one of the major steps (according to the USEPA and the UN IPCC) in the reduction of global warming and our machines are one of the few machines designed to play a positive role in that effort. Visit our website if you are interested in additional information, many of the test reports are available for download on our website.



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