WOOD WASTE AND HEAT SINKS FOR ENERGY

Corky Smith Sr.
Olivine Corporation
Bellingham, Washington

We were recently in Australia and I observed one company drying Radiata Pine. The pine was put into a kiln and a heavy concrete slab about 18" thick was put on top of the lumber to keep it from warping, etc. The temperature was considerably higher than anything presently in use in the U.S.A. The drying time of the lumber was just 8 hours--three batches every 24 hours.

One interesting thing is that they burned up two dry kilns while experimenting.

One other interesting development the Australians are working on is continuous drying, stacking green lumber on top of the kiln and taking it off the bottom of the stack after the lumber is dried. The process is only in the experimental stage so far.

There is a 20' diameter by 42' high Olivine Silo Burner that burns 8 tons per hour of bark at Ronald, Washington, near Cle Elum, Washington (80 miles east of Seattle). The burner has one 20 H.P. underfire fan and five 5 H.P. overfire fans blowing air in a counter-clockwise tangential direction. The bark is slung into the middle of the burner by a rubber belt traveling at about 1100 F.P.M.

Standing next to the burner is a railroad tank car cut in two and both halves are stood on end with a heat duct pulling 1400°F hot combustion gases from the top of the burner up through the tanks filled with about 8' of rock. Water at 120°F runs down over the rocks and out the bottom of the tank at 140°F. This arrangement heats approximately 1500 gallons of water per minute.

We are using two 60 H.P. fans to draw the flue gas from the top of the burner to the bottom of the two tanks of rock and out to the atmosphere. The savings of burning bark to heat the water over previously using diesel oil is $1500.00 per day.

The excess heat not used to heat the water is exited to the atmosphere out the top of the burner.

The next discussion here is about the combination of Silo Burner hooked up to a silo type refractory tank filled with properly sized rock.

The gases from the waste fuel are drawn down through the rock and cooled with ambient air to the proper temperature and blown into the kiln.

This rock system has been used in the steel industries since the 1800s. The advantage of the rocks is using it as a heat sink, filter, and spark puter outer. The burner can be run 8 hours and the dry kiln used for 24 hours.

The exhaust from the burner going through the rock heat sink is so clean and clear that a seagull flew right through the exhaust heat. The bird landed, shook his head, stretched his wings, wondered what happened, and flew off again.

We are presently working on hooking steam boilers to the burner for generating electricity and using the low pressure

exhaust to heat the dry kilns. We are also working on compressing the hot air from the flue gases after it goes through a heat exchanger, and generating electricity and using the exhaust heat to dry lumber.

The big advantage of the Silo Burner and related heat recovery systems is that it is so simple and very inexpensive to construct.

The ideas of using waste to make heat are unlimited and very exciting. The Arabs have really put us into the waste burning business.

Thank you for being such a friendly group.