



Why burn, value added white wood, when you can burn bark?

As an energy system provider, Wellons often gets asked the question: “ **What am I better off burning to produce the heat I need to dry my white wood?**” The answer is simple “**Bark**”! Here’s why.

First and foremost in order to make premium grade pellets, pellet mills need to process only white wood in order to keep ash levels of their finished product within acceptable limits (less than 1% for premium pellets and less than 0.5% for super premium pellets). Since Bark has a high ash content it is not recommendable to process whole tree chip material or mix bark into the white wood. So the mill is left with bark as a by-product of its day to day operations. Green bark is usually a product that will have half the market value of green white wood. See the following table comparing a 100 000 ton/yr pellet plant operating a bark burner compared to the same plant operating a dry white wood burner to dry its production.

Comparison between operating a bark burner and a dry white wood burner

	Unit	Scenario #1 Dry burner	Scenario #2 Bark burner	
A	Pellet production @ 8% MC / year	ton/yr	100 000	100 000
B	Green white wood needed for pellet production	ton/yr	188 000	188 000
C	Green white wood needed to dry production	ton/yr	56 800	N-A
D	Bark consumption to dry production	ton/yr	N-A	43 600
E	Operational hours / year	hr	8 000	8 000
F	Market value of green white wood	\$/ton	30	30
G	Moisture content of green white wood	%	50	50
H	Market value of bark	\$/ton	15	15
I	Moisture content of bark	%	50	50
J	Yearly operational cost of white wood to dry the wood	\$	1 704 000 \$	N-A
K	Yearly operational cost of bark to dry the wood	\$	N-A	654 000 \$

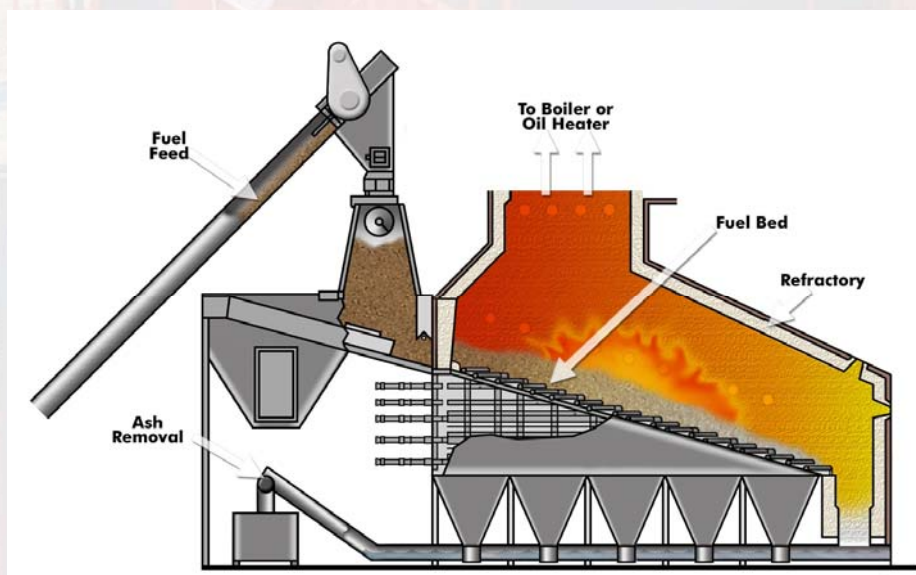
**Difference of
1 050 000 \$**

As the table illustrates operating a rotary dryer using value added dry white wood increases operating costs, compared to using bark. The difference in operating costs alone will very easily cover the incremental cost of installing a bark burner.

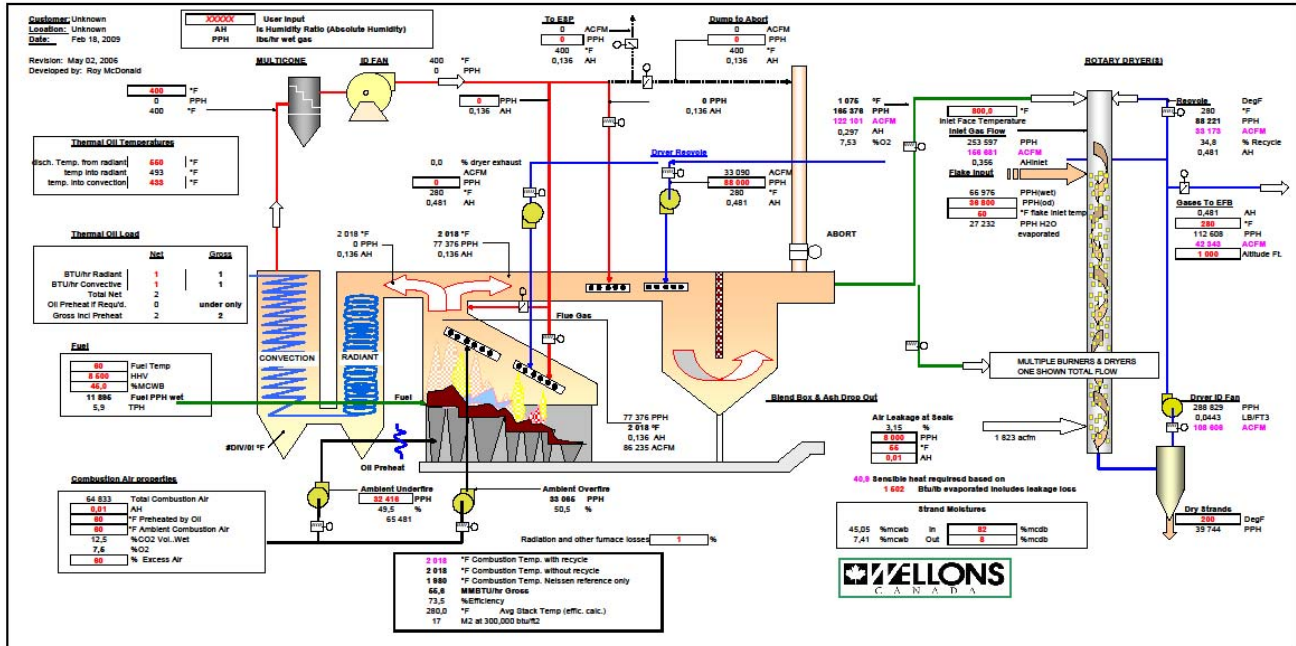
Another very important observation is that the dry burner will consume part of the production coming out of the dryer, so the plant will need to process this extra fiber (see "row C" of the table) as well as the fiber needed for the pellets (see "row A"). The pellet plant has to dry 30% more material in order to feed the dry burner with the fuel it needs to operate. This translates into greater capital investments for all of the drying equipment. The rotary dryer, primary cyclone, induced draft fan, etc... all have to be 30% larger in order to process the fuel required by the dry burner. This is not the case with a bark burner because it's a self sufficient system that dries its own fuel in the combustion chamber and can be fed directly with 55% MC fuel.

Conclusion: burning bark is cheaper in the long run because of its lower market value and the fact that the pellet plant drying facility can be sized 30% smaller than one using a dry burner.

Wellons FEI Corp. manufactures wood fired combustion chambers requiring minimum supervision, capable of burning a multitude of wood residues, with fully automatic ash extraction capabilities. Wellons FEI uses a stepped grate combustion system and furnace as the core of their system, which can burn wood residues up to 55% in moisture content. The system is especially adapted for bark with conveyors with extra large chutes, built out of tempered steel to resist the harsh abrasive nature inherent to bark.



Wellons FEI's engineering team can also assist clients in sizing their energy systems using specialised in-house calculation tools (See image below).



For more information about this product please contact Wellons FEI Corp at 450.922.3117 or email info@wellonsfei.ca.