Energy required to dry wood:

- 1,500 - 1,600 btu’s to remove 1 lb of water from wood chips
- Drying 1 ton of green pulpwood at 50% moisture content to 20% moisture content yields:
  - 1,760 lbs green wood + 240 lbs green bark
  - 1,100 lbs of wood at 20% moisture content after drying with 1,056,000 btu’s of energy
- If using all natural gas ($10/MCF), then cost of fuel to dry 1 green ton = $10.56
- Utilizing bark to dry wood:
  - The bark could be used in a biomass burner to dry the wood
  - Assuming a 60% efficiency in bark combustion system, 240 lbs of bark/ton x 4,300 btu’s/lb x 60% = 620,000 btu’s available to dry wood.
  - This will only supply 59% of the needed energy to dry one ton of green wood to 20% moisture content.
  - Natural gas could be used to supplement the additional requirement.

Approximate Costs:
- $25/ton purchase cost of wood and bark
- 240 lbs bark = 12% of ton
- $25 x 12% = $3 = cost of 620,000 btu’s from 240 lbs bark
- 436,000 btu’s from natural gas = .436 x 1 million btu’s/MCF x $10/MCF = $4.36 cost of natural gas
- Total fuel cost = $7.36 (to dry 1 US ton green wood to yield 1100 lbs wood at 20% mc)
- $13.40 to dry green wood to yield 1 US ton wood at 20% mc
- $15.20 to dry green wood to yield 1 metric tonne wood at 20% mc

System cost of a 10 ton/hour drier + biomass burner + emission equipment + fuel handling is estimated to be approximately $5 million installed. This does not include chippers, grinders, truck dumps, scales and other chip conveying not associated with the drier or burner.

Approximate operation and maintenance cost of the system is $1 million per year. This does not include fuel costs listed above.

Sources

Nathan McClure, Georgia Forestry Commission
Gary Elliott, International Applied Engineering, Inc.