

عنوان مقاله:

Reduced energy consumption & emission in tea drying process through improvements in wood fired steam boiler and heat exchanger system

محل انتشار:

همایش ملی آشنایی با فناوریهای روز در زمینه مهندسی مکانیک (سال: 1389)

تعداد صفحات اصل مقاله: 5

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خلاصه مقاله:

Hot air dryer is employed in tea industry for drying tea leaves or powder at the final stage of the tea production process. Generally the hot air is supplied through a wood fired furnace which are highly energy inefficient and unsafe. These furnaces are replaced by boiler and heat exchanger system to supply hot air. The system under study is a steam boiler and heat exchanger system with current fire wood consumption of about 1.6 kg of fire wood per kg of made tea. This system can be further improved to enjoy fire wood saving and reduced Carbon Dioxide emission. The target value of fire wood consumption in the improved system is about 1.0 – 1.1 kg of fire wood per kg of made tea which is about 30-40% saving of fire wood at 20% moisture content including the 30 – 40% reduction in Carbon Dioxide emission. The employed systems for improvements include recovery of heat from cyclone separators of the tea dryer, recovery of sensible heat from the hot condensate from the existing steam heat exchanger and increasing heating area of the heat exchanger. The improved system after the study will reach the expected level of reduction in fire wood consumption and Carbon Dioxide emission.

کلمات کلیدی:

Heat exchanger, Hot air, Carbon Dioxide, fire wood, dryer

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