

FIREWOOD ENERGY UTILIZATION IN DIFFERENT DRYERS USED IN TEA PROCESSING

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ABSTRACT

Tea industry is one of the most important key drives in Sri Lankan economy. It utilizes both electrical and thermal energy for its processing. The tea factories pre-dominantly use fuel wood to meet their thermal energy needs, in the drying process, which is the major transformation process in the tea industry. Further, different types of dryers are used depending on the production capacity of the tea factory.

The lack of researches on the energy utilization of different dryers used in Sri Lankan tea industry, directs the researchers to find out the performances of different dryers. A study was done focusing the firewood energy utilization of different dryers used within the recent past.

A survey type study was carried out with the responses of tea factory officials. Secondary data were also collected from the annual reports of Sri Lanka Sustainable Energy Authority and different tea factories. Specific Thermal Energy Utilization was used to measure the level of firewood consumption of dryers and it was further tested for different dryer types and combustion technology.

The outcome of the study revealed that, there was no significant effect on the tested two parameters, *viz* dryer type and combustion technology for the thermal energy utilization of dryers. But, it was observed that the majority of tea factories use Endless Chain Pressure Dryers and furnace combustion technology. The Endless Chain Pressure Dryers are mainly used in small scale production, Fluidized Bed Dryers and Combination dryers are highly used in large scale production in the tea factories. The low country and up country factories function towards a small scale production and while the mid country factories towards a large scale production. Further, majority of the small scale production tea factories use furnace and the large scale production tea factories use boilers.

Improper feeding practices of firewood into the dryers and poor dryer maintenance were the main reasons for the ineffective performance of the dryers.

Key Words – Combustion technology, Endless Chain Pressure Dryer, Firewood consumption, Fluidized Bed Dryer, Specific thermal energy utilization