

**ESTIMATION OF BENEFITS OF USING AUTOMATED  
FLUID BED DRYER (FBD) FOR DRYING ORTHODOX-  
ROTORVANE TEA**

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By

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## ABSTRACT

Fluid Bed Dryers (FBD) are commonly used to dry teas in Orthodox-Rotorvane tea manufacturing method. Temperatures of drying air and tea-bed temperature at the discharge end, volume flow rate of drying air and feeding rate of dhool significantly influence the drying process. The deviations of these parameters from required levels have a direct impact on the quality of the final made tea. An automated control system based on a Programmable Logic Control (PLC) for Fluid Bed Dryer (FBD) was tested for drying the tea. Green leaves with same leaf standard were collected and they withered and rolled under similar condition to obtain dhools. Then the dhools were allowed ferment under standard conditions. Fermented dhools were dried using the same commercial scale fluid bed dryer under manual and automated operation mode separately while maintaining similar drying conditions. Dried teas were graded and samples of Broken Orange Pekoe Fannings (BOPF), Broken Orange Pekoe (BOP) and Dust 1 tea grades from both automated and manual drying modes were analysed for quality and chemical parameters. Variation of moisture content of dryer mouth tea, price variations of graded teas, firewood consumption and effectiveness to the grade mix were studied for automated and manual drying modes with the view to study the benefits of using the commercial-scale Automated Fluid Bed Dryer. Moisture content of tea dried by automated mode was consisted than that of tea dried by manual mode. Firewood consumptions of the operation modes were not significantly different. Further, grade mix of dried tea and theaflavins and thearubigens content of tea dried by automated and manual modes were not significantly different. Tea dried by automated mode recorded higher pricing than the dried by manual mode. Use of automated fluid bed drying mode increased the net scale average of tea by 4.6%.

*Keywords:* Automation, fluid bed dryer, benefits, estimate