

Performance Evaluation of Biomass Dryer

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Abstract

The need to meet rising global energy demands as well as the requirement to cut carbon emissions has prompted research into renewable energy sources, with a particular emphasis on biomass-derived biofuels. This abstract gives a comprehensive overview of a biomass dryer project that addresses these crucial problems and offers a practical way to handle agricultural product and waste. The biomass dryer's complete lifecycle is covered by this project, from conceptualization to construction through thorough testing. The choice of the best materials must be made at the design phase, taking into account elements like availability, thermal conductivity, and durability. In order to maximize performance, aspects like the dryer's capacity and energy efficiency are carefully taken into account during the design process. Fabrication entails building the dryer in accordance with the chosen design, guaranteeing accuracy and compliance with safety regulations. Its functionality, energy efficiency, and performance under varied operating situations are rigorously tested. An important factor considered in this stage

is the dryer's ability to effectively remove moisture content. Additionally, this project includes a cost analysis that covers material acquisition, manufacturing costs, and ongoing operational costs. The biomass dryer's financial sustainability is evaluated in relation to its potential advantages in terms of decreased moisture content, increased biofuel production efficiency, and environmental impact. The biomass dryer's importance in the handling of agricultural products is further shown by this project. This 4.5-meter-long, 2-meter-wide, and 2-meter-high biomass-fueled dryer's layout is intended to effectively dry agricultural products like fruits, vegetables, and cereals. To provide reliable and controlled drying processes, this dryer includes efficient insulation, airflow management, and a durable exterior.

Keywords: Biomass-derived biofuels, biomass-fuelled dryer