

Title Performance Analysis of Adsorption / Regeneration of Desiccant Tray for Energy Saving in Bed-type Longan Hot-air Drying

Author B. N. Hung, A. Nuntaphan and T. Kiatsiriroat

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### **Abstract**

Longan is an economic fruit in the northern part of Thailand. Dried longan is also one main product which is very popular in the region. The common technique to produce dried longan is bed-type hot air drying of which the air is heated directly with LPG before feeding to the longan bed for drying. However, this kind of dryer has low thermal efficiency. One method for increasing its efficiency is to reduce the humidity of air and increase its temperature before entering the combustion chamber.

In this work, a set of tray-typed silica gel with three different sizes of tray thickness which are 2.5, 5.0 and 7.5 cm is presented. Each size of the desiccant tray is tested the adsorption/regeneration performances in a wind tunnel. The parameters related such as the tray thickness, the air velocity and the air moisture content including the air temperature are related. The experimental model is also used to design a desiccant unit of bed-type longan dryer. It could be found that performance of the modified longan dryer is better than the common one.