

ABSTRACT

TWO STAGE HEAT PUMP DRYER

A two-stage heat pump dryer incorporating an economiser for drying of agricultural products is disclosed. The advantages of a two-stage system plus economiser are the distribution of heat duties among the economiser and evaporators, the recovery of more latent energy from the drying air and the implementation of several control strategies for better humidity control. The addition of two subcoolers to the system makes available more heat during higher temperature drying. The good control of air temperature and moisture allows both cold and hot drying for various agricultural products. The installation of an external evaporator to the dryer helps to initiate a quick start-up mechanism for the heat pump dryer and injects auxiliary load to the refrigeration system when low latent load in the chamber is encountered. The dryer has a mechanism to shut down the heat pump and maintain the drying air temperature using an auxiliary heater bank.

(Figure 1 is to be published)