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热泵烤烟系统性能的试验研究

Experimental study on performance of heat pump system for tobacco leaf flue-curing

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中文摘要:

为了研究热泵烤烟的系统特性，并为工程应用推广提供有价值的参考，该文设计了一种新型的热泵烤烟系统，对热泵烤烟进行了试验研究。当烤房内鲜烟装载量为2 432?kg时，压缩机的最大功率为12.6?kW，系统制热系数达到了3.25，整个过程的除湿能耗比为2.42?kg/（kW·h）。最后对热泵烤烟和燃煤烤烟的经济性进行了比较，结果显示得到1?kg干烟热泵的烘烤成本为2.12元，而燃煤的烘烤成本为2.97元。与燃煤烤烟相比，热泵烤烟具有明显的节能优势和社会经济效益。

英文摘要:

In order to study the characteristic of heat pump system for tobacco leaf flue-curing and provide valuable reference for engineering application and extension, a new heat pump system which had a simple structure, easy controlling and low cost for tobacco leaf flue-curing was designed. Then the experimental performance of such system was investigated. When the quantity of fresh tobacco loaded in the barn was 2 432 kg, the results of the experiment indicated the maximum power consumption of compressor was 12.6 kW; that the coefficient of performance (COP) reached 3.25; and the specific moisture extraction rate (SMER) of heat pump system for tobacco leaf flue-curing was 2.42 kg/(kW·h) during the whole curing process. Finally an economic comparison for curing tobacco between with heat pump and with coal stove was made. The curing cost for 1 kg dry tobacco leaves was 2.12 Yuan with heat pump and 2.97 Yuan with coal stove. Comparing with coal stove, heat pump system for tobacco leaf flue-curing has advantage in energy saving and remarkable social and economic benefits.

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