# 太阳能辅助热泵综合就仓干燥系统实验研究 Experiment on Hybrid Solar Drying System Assisted by Heat Pump for Grain In-store Drying

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关键词： 太阳能 热泵 就仓干燥 实验

摘 要： 设计了一种由太阳能空气集热器、热泵和翻粮机组成的太阳能辅助热泵就仓干燥系统，用于粮食就仓干燥。对系统进行了实验研究，研究结果表明，太阳能空气集热器平均热效率达到63%，热泵性能系数达到5.4，联合系统能够提供充足、稳定的热量，并且干燥效果明显、干燥时间短、耗电量小、干燥均匀性好。应用该系统可安全、节能、有效地降低仓储玉米含水率。 A hybrid solar drying system assisted by heat pump for grain in-store drying was developed. The system is composed of solar air collector, heat pump and stir machine for grain. The experimental study was conducted for maize drying. The results indicated that average thermal efficiency of the air collector is up to 63% and COP of the heat pump can reach 5.4. The combined system can supply adequate and stable thermal energy. The effect of drying is obvious. Drying time is reduced and energy consumption is low. Besides, the uniformity of moist content is improved. Utilized for maize in-store drying, the system can reduce the moisture content of maize in the granary with the characteristics of safety, energy saving and better effect.

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