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The Performance Improvement of Heat Pump Dryer Using CO₂ as Working Medium

Zhang Zaoxiao Wen Jian YU Yongzhang Feng Xiao

School of Environmental & Chemical Engineering, Xi'an Jiaotong University

Xi'an, Shaanxi Province 710049, P. R. China

zhangzx@mail.xjtu.edu.cn

Abstract

Since natural fluids plays a most important role in refrigerant substitution, in this paper, a trans-critical closed type heat pump dryer is discussed in details by using CO₂ as working medium. The performances of CO₂ heat pump dryer are compared with that of R134a sub-critical heat pump dryer's, which shows that CO₂ heat pump dryer can obtain reasonable drying effect. The compact heat exchanger is designed to provide a higher working temperature. The factors impacting the system performance are analyzed so that the most suitable conditions are obtained to ensure optimum operating results.

Keywords: heat pump dryer, CO₂, trans-critical, closed type cycle, performance