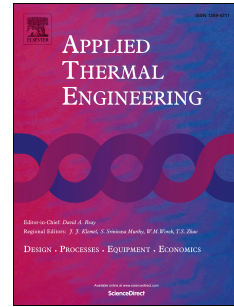


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Fouling of Enhanced Tubes for Condensers Used in Cooling Tower Systems: A Literature Review

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Abstract

A literature review on the fouling of enhanced tubes in cooling tower systems is presented, including experimental studies and model development. Enhanced tubes have been used widely in the HVAC&R industry, because of their superior heat transfer performance. However, fouling on the heat transfer surface affects the performance significantly. Fouling in a condenser cooled by water circulating through a cooling tower, at typical cooling tower operating temperatures, is dominated by precipitation and particulate fouling mechanisms. The geometry of tubes, the fouling potential of the cooling water, and the water velocity are the dominant parameters that affect these fouling mechanisms. Experimental studies of particulate and precipitation fouling are summarized and analyzed in detail, including the effects of geometries of enhanced tubes, and a method to create the test cooling water at required water quality in the laboratory. Current particulate and precipitation fouling models for enhanced tubes in the application of cooling water tower systems are discussed and summarized. Further requirements are identified in this paper in order to develop a reliable fouling model to predict the fouling thermal resistance on the enhanced tubes in the application of cooling water towers.

Keywords: Enhanced tubes, Fouling, Cooling water tower, Model, Prediction

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