Finned Tube

Fall 2009

TO: Engineering Development Branch

FROM: Engineering Division

SUBJECT: Finned Tube Heat Exchanger Evaluation

Our company has a contract to design a heating system for the Fiber Chemical Company. This heating system will be used to deliver hot dry air to a dryer used in removing moisture from the company's spun fibers. It has been decided to use steam-heated water as the heating agent.

The heat exchanger design specifies that the heat transfer shall be by cross-flow forced convection outside the finned tubes (air velocities of ~4 m/s). Our supplier only has certain sizes of finned and bare tubes available, and some samples are mounted on an experimental rack in the lab. Please conduct appropriate heat-transfer studies and then formulate a recommendation concerning which type of pipe we should use.

Our company can purchase used, rusted finned tubes at 1/3 the cost per foot of length compared with the new polished finned tubes and there is sufficient space in the heater design for the additional tubes. Should we purchase the rusted tubes?