

Increasing Efficiency of Condenser Water Systems

Authors : Steven Driver, Richard Costello

Abstract : The intent of this paper is to increase awareness around different technologies used to treat and clean condenser water. When taking this approach to clean up the water, increased heat transfer in the chilled water system results. Condenser water absorbs debris from the air as the system is open to the environment outdoors to reject heat. This technical evaluation reviews various types of treatment systems to better understand the effectiveness of removing dissolved and suspended solids from open condenser water systems. By removing solids and scale from the system, a higher heat transfer can be accomplished. A substantial part of this paper was completed in October 2012 by Pacific Northwest National Laboratory to evaluate performance of particle separators, disc filters, and sand filtration technologies. Although some of the research of this paper is older, the concept has not changed for filtering water. An added technology evaluated in this paper was not initially studied until this paper was updated in 2024. Better known as a particle precipitator, the added technology was evaluated as an option or to run in parallel with sand or separator technology to enhance water and chemical treatment. The particle precipitator can run alone if sand filtration or separator systems do not exist. In this paper, the theoretical financial differences between sand filters and separators are evaluated. The economic comparison can be found in the Systems Economics section of this paper.

Keywords : condenser, energy, environment, water

Conference Title : ICWEEM 2025 : International Conference on Water, Energy and Environmental Management

Conference Location : Amsterdam, Netherlands

Conference Dates : February 03-04, 2025