

Targeting the Minimum Water Flow Rate Using Water Cascade Analysis Technique

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DOI 10.1002/aic.10235

Published online in Wiley InterScience (www.interscience.wiley.com).

*This work presents the water cascade analysis (WCA) as a new technique to establish the minimum water and wastewater targets for continuous water-using processes. The WCA is a numerical alternative to the graphical water targeting technique known as the water surplus diagram. The WCA is to the water surplus diagram in water pinch analysis (WPA) as problem table analysis (PTA) is to the grand composite curves in heat pinch analysis. By eliminating the tedious iterative steps of the water surplus diagram, the WCA can quickly yield accurate minimum water targets, pinch point locations, and water allocation targets for a maximum water recovery (MWR) network, thereby offering a key complementary role to the water surplus diagram in the synthesis of water network. As in the case of the water surplus diagram, the WCA is not limited to mass-transfer-based operations and is applicable to a wide range of water-using operations. © 2004 American Institute of Chemical Engineers *AIChE J.* 50: 3169–3183, 2004*

Keywords: water minimization, minimum water and wastewater targets, water allocation targets, pinch analysis, Water Cascade Table

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