SYSTEM ENGINEERING

基于浓度间隔分析的用水系统集成（I）非传质操作

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摘要　A strategy for water and wastewater minimization is developed for continuous water utilization systems involving fixed flowrate (non-mass-transfer-based) operations, based on the fictitious operations that is introduced to represent the water losing and/or generating operations and a modified concentration interval analysis (MCIA) technique. This strategy is a simple, nongraphical, and noniterative procedure and is suitable for the quick yields of targets and the identification of pinch point location. Moreover, on the basis of the target method, a heuristic-based approach is also presented to generate water utilization networks, which could be demonstrated to be optimum ones. The proposed approaches are illustrated with example problems.

关键词　water minimization　water utilization network　targeting method　concentration interval table

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Synthesis of water utilization system using concentration interval analysis method (Ⅰ) Non-mass-transfer-based operation

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Abstract A strategy for water and wastewater minimization is developed for continuous water utilization systems involving fixed flowrate (non-mass-transfer-based) operations, based on the fictitious operations that is introduced to represent the water losing and/or generating operations and a modified concentration interval analysis (MCIA) technique. This strategy is a simple, nongraphical, and noniterative procedure and is suitable for the quick yields of targets and the identification of pinch point location. Moreover, on the basis of the target method, a heuristic-based approach is also presented to generate water utilization networks, which could be demonstrated to be optimum ones. The proposed approaches are illustrated with example problems.

Key words　water minimization; water utilization network; targeting method; concentration interval table

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