

عنوان مقاله:

Conceptual Optimization of Water and Wastewater Network of a Gas Refinery with Considering Pressure Drop and Pumping Cost

محل انتشار:

مجله پردازش گاز، دوره 7، شماره 1 (سال: 1398)

تعداد صفحات اصل مقاله: 14

نویسندگان:

Poroshat Haddadi - *Chemical Engineering Department, Islamic Azad University, North Tehran Branch, Tehran, Iran*

Mohammad Hassan Khoshgoftar Manesh - *Division of Thermal Sciences & Energy Systems, Department of Mechanical Engineering, Faculty of Technology & Engineering, University of Qom, Qom, Iran/ Center of Environmental Research, University of Qom, Qom, Iran*

Mehdi Sedighi - *Center of Environmental Research, University of Qom, Qom, Iran/ Department of Chemical Engineering, University of Qom, Qom, Iran*

خلاصه مقاله:

This paper aims to introduce a constructive method for optimizing the supply of freshwater and wastewater in the process industry. Different conceptual methods such as Composite Table Algorithm (CTA), Extended Composite Table Algorithm (ECTA), Composite Matrix Algorithm (CMA) have been investigated to optimize water and wastewater network. Also, Mixed Integer Non-Linear Programming (MINLP) as a mathematical and Cuckoo Search (CS) as artificial intelligence approaches have been applied and compared with conceptual methods. In this study, pressure drop calculations and pump cost have been considered as well. In this regard, a computer program has been developed to compute the CTA, ECTA, CMA, and CS approach for a water and wastewater network. The MINLP method has been performed in the APSWATER software. A water and wastewater network of a gas refinery has been considered as a case study. Results show that between targeting approaches, the CMA method is a more powerful tool for optimum cost rather than CTA and ECTA. Finally, CMA, CS, and MINLP yield almost similar results. However, CS and MINLP are more time-consuming in comparison with targeting approaches.

کلمات کلیدی:

CTA, ECTA, MINLP, CS, Water Network, Gas Refinery

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1254543>

