

عنوان مقاله:

Optimization of water distribution networks using developed binary genetic algorithm and hydraulic model software

محل انتشار:

دوفصلنامه تحقیقات کاربردی در آب و فاضلاب، دوره 7، شماره 1 (سال: 1399)

تعداد صفحات اصل مقاله: 6

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خلاصه مقاله:

The optimal design of urban water distribution networks is a significant issue that has been of critical interest in the water industry for many years. The optimal design of the distribution network aims to find the best solution for transferring water from the reservoir to consumers at the lowest cost. In this study, optimization of the water distribution network (ZONE 1 of Ilam city, Iran) was performed using the fast messy genetic algorithms (FMGA) tool in the hydraulic model for three different pipe networks. Also, these networks were optimized by using a combination of EPANET and an in-house developed binary genetic algorithm in MATLAB. The costs of the optimized hydraulic networks of polyethylene and polypropylene pipes were lower, respectively, by 20.56 % and 52.94 % compared to the consulting company's original designs, while for the glass fiber reinforced plastic pipe (GRP) pipe network the cost increased by 12.61 %. Also, the results of a developed algorithm for polyethylene pipe decreased by 22.13 %.

کلمات کلیدی:

Genetic Algorithm, Optimization, Water Distribution Network, Hydraulic Model, MATLAB

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