عنوان مقاله:

Mathematical Model for Prediction of Water Transmission Failure

محل انتشار:

اولین همایش ملی مدیریت کیفیت آب و سومین همایش ملی مدیریت مصرف آب (سال: 1400)

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خلاصه مقاله:

The reason for the high-pressure drop in water transmission is in relation to the leakage effect (local leakage effect on high pressure decreasing in water pipeline). This work led to improved standards for precession designs and installation techniques in the field of sub-atmospheric transient pressures that can suck air into the water system due to repeated pipe breaks. The numerical modeling and simulation which was defined by Method of Characteristics (MOC) provided a set of results. Basically, the MOC approach transforms the water hammer partial differential equations into the ordinary differential equations along the characteristic lines. Therefore, the computational model of fluid flow in nonlinear dynamic modeling in the water pipelines is examined. In this work, based on the Geospatial Information Systems (GIS), the Courant number was equal to ۰.۹۷۷ and in the field test, the pressure variation due to pressure surge was ۱۰۸۴ m/s in ۰.۰۰۵ sec. The result of this research led to saving the amount of ۲۰۰ liters per second of drinking water.

کلمات کلیدی:

Geospatial Information Systems, Water Hammer, Finite Difference Method,Method of Characteristics, Mathematical Model

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