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HIDRAVLIČNI MODEL VODOVODNEGA SISTEMA VODOVODA CELJE

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Povzetek

Razvoj računalništva in znanosti je šel tako daleč, da si hidravličnega računa vodovodnih omrežij drugače kakor s pomočjo računalnika skoraj ne moremo več predstavljati. Programska orodja, ki so danes na voljo na tržišču, nam poleg samega hidravličnega računa omrežja omogočajo izdelavo modela in poganjanje časovnih simulacij, simulacij kvalitete vode in starosti vode. Večina omenjenih orodij je nadgradnja programa Epanet, ki sem ga za delo z modelom uporabil tudi jaz. V okviru diplomske naloge sem izdelal model vodovodnega omrežja Celje. Podatke o sistemu sem črpal iz GIS podatkovnih baz, ki so del digitalnega katastra podjetja Vodovod - kanalizacija, d.o.o. Podatke iz GIS baze sem urejal s programom ArcView, v katerem sem tudi izdelal model. Model sem z uporabo dodatka za ArcView DC Water Design povezal s program Epanet 2.0, ki mi je nato omogočal delo z modelom. Za potrebe modela sem ugotovil porabo vode v omrežju po evidenci hišnih številk in urno porabo večjih porabnikov v Celju. Izvedel sem verifikacijo in osnovno umerjanje modela. Na koncu sem za različne obremenitve izvedel ustrezne hidravlične izračune in analiziral rezultate.

Ključne besede: hidravlični model, vodovod Celje, Epanet 2.0, GIS podatkovne baze, poraba, urna poraba, ArcView, DC Water Design, verifikacija, osnovno umerjanje, hidravlični račun

Abstract

The development of computer science has gone so far that we cannot imagine calculating hydraulics of piping systems without computer anymore. Market offers a number of different software packages available for constructing models of water distribution systems. These programs enable us to run extended-period simulation, simulations of water quality and determining the age of water in pipes. Most of the software for water distribution modeling is based on Epanet, which I used for my model. In my project I have built a hydraulic model of Celje's water distribution system. Dada needed for building the model has been collected from GIS database, which is in property of Vodovod- kanalizacija, d.o.o. This data has been edited by program ArcView 3.1, which was also used for building the model. By using ArcView extension named DC Water Design, I've connected my model with Epanet 2.0. Epanet enabled me to work with the model. For building a realistic model I had to determine water demand by street number records and water demand per hour for the biggest water consumers in Celje. When the model was built I made the verification and basic calibration of the model. Finaly, I ran simulations for five different hydraulics conditions in the water distribution system and analyzed the results.

Key words: hydraulic model, water distribution system of Celje, Epanet 2.0, GIS database, demand, hour demand, ArcView, DC Water Design, verification, basic calibration, hydraulic computation