

Zimoch, I. Computer Simulation as a Tool Assisting in the Operation of a Water Supply System. *Ochrona Srodowiska* 2008, Vol. 30, No. 3, pp. 31–35.

Abstract: Procedures are presented for the construction of a hydraulic model describing the water supply system of the city of Wroclaw. The model was built using the EPANET 2 computer program, which included such parameters as simulation time and simulation step, and thus enabled the examination of a water-pipe network under actual dynamic conditions. The calibrated hydraulic model of the water supply system for the city of Wroclaw (developed *via* the above route) is a valuable analytical tool for the investigation of a diversity of simulated random events that occur when the water-pipe network is in service. Taking into account the results obtained and making use of the model, it is possible to establish the rules of a rational in-service operation of the water-pipe network. The model can also be of use in the management of waterworks as it helps to develop methods of predicting the behavior of particular objects being part of the municipal water supply system. Using the results of computer analyses which simulate the functioning of the water-pipe network (both under normal and extreme conditions) offers the possibility of taking steps that will minimize the effects of unexpected random events and, in consequence, reduce the risk which the management of the waterworks will have to take. The model may also be of help in making decisions about how to modernize or develop the water-pipe network in a rational way. The calibrated hydraulic model forms the basis for the construction of the dynamic quality model. The aim of the quality software packet is to forecast water quality variations during transport to the user under variable conditions of the hydraulic functioning of the water-pipe network.

Keywords: Water supply system, water-pipe network, hydraulic model, calibration of dynamic model, Thiele's inconsistent statistics.