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Abstract: The case in point is the water distribution system in Baranowka, a housing estate of the city of Rzeszow. The object under study is the process of hydraulic resistance identification for this water distribution system. The paper includes a description of the identification process, which consisted in adjusting the hypothetic resistance of each pipe to its real resistance, making use of the following input data: pipe material and age, quality of transported water, and the measured values of hydraulic resistance for selected pipes. The constructed hydraulic model and the adequacy of the estimated pipe resistance were verified by a number of experiments, where pressure and flow rate were measured simultaneously at selected points of the water-pipe network during controlled fire hydrant outflows. The identification process was regarded as completed when the difference between the pressure measured in the water-pipe network and the pressure simulated using the hydraulic model did not exceed 2 mH₂O. The results of comparative analysis performed under variable conditions of water demand and supply in the water-pipe network substantiate the adequacy of the hydraulic model at the level of the accuracy assumed.

Keywords: Modeling, water-pipe network, water demand, pressure, flow rate, calibration.