



“Gheorghe Asachi” Technical University of Iasi, Romania



ENERGY CONSUMPTION ESTIMATION IN WATER DISTRIBUTION SYSTEMS USING FUZZY TECHNIQUES

Marcel Istrate*, Gheorghe Grigoraş

*“Gheorghe Asachi” Technical University of Iaşi, Faculty of Electrical Engineering, Department of Power Systems,
51-53 Mangeron Blvd., 700050, Iaşi, Romania*

Abstract

This paper applies a fuzzy method for the estimation of the daily electrical energy consumption of the fresh water hydrophore stations of a water distribution system. Based on the uncertainties of the water distribution system, the fuzzy logic was used to simulate a correlation between water and electrical energy quantities. Thus, the proposed method is proven as a useful tool for estimation of the daily electrical energy consumption considering the flow and the pressure growth of the water as fuzzy numbers. The results reveal that it is feasible in theory and reliable on calculation applying trapezoidal fuzzy numbers to the estimation of the daily electric energy consumption of the hydrophore stations. The estimation error is less than 6 %.

Key words: electrical energy consumption estimation, fuzzy logic, fresh water hydrophore stations

* Author to whom all correspondence should be addressed: email: mistrate@ee.tuiasi.ro; Phone: +40-741128177; Fax: +40-232237627