AUTOMATED CALIBRATION OF THE SIMULATION MODEL OF IRRIGATION PROJECTS BY HARMONY SEARCH OPTIMIZATION

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The paper deals with calibration of the simulation models of hydraulic part of an irrigation project. Calibrated simulation model can be used in design, reconstruction, enlargement or maintenance of the pressurized irrigation systems. Computer model of the water distribution system is a valuable tool which can assist engineers and planners in analyzing the hydraulic performance of water delivery systems. Calibration of the water distribution model consists in comparison of pressures and flows predicted with observed pressures and flows for known operating conditions (i.e., pump operation, tank levels, pressure-reducing valve settings), and adjustment of the input data for the model to improve agreement between observed and predicted values. In practice, given a set or sets of measured state variables, engineers apply trial and error techniques with their judgment to vary the parameters and accomplish this task. Trial and error techniques are tedious do not guarantee reasonable results. The paper introduces the methodology of determination of calibrated parameters automatically. Described methodology of calibration is based on optimizing procedures using the harmony search approach.