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Abstract

EVOLUTION OF CHLORINE CONCENTRATION IN WATER DISTRIBUTION NETWORKS

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A water distribution network has as a function the continuous supply of consumers with water of quantity, quality and service pressure.

By the hydraulic calculation of the networks there are assured the flow rates and the necessary pressures at the consumers. The water quality is obtained by the corresponding treatments while the maintaining of water quality during the time of passing distribution network is realized by the enter diminishing in the network of biodegradable organic substances supplementing the treatment in the last phases with the ozone – granular active carbon (GAC) coupling, slowing down the bacterial development by introducing chlorine in the network with biological stability effect, and by periodical washing, in order to eliminate the settlings in zones with slow velocities.

The present paper deals with a model of following the chlorine concentration evolution during the time of network transit. The chlorine concentration calculation at nodes and the ends of the pipelines is realized with the help of a linear algebraic system of T (pipelines) + N (nodes) equations and knowledge or imposing the kinetic constant value for the chlorine reaction.

The results of numerical modeling of quantitative (hydraulic) and quantitative (chlorine concentration) of a distribution network has a practical value only if calibrations are done for both situations, operations which are difficult to realize without computerized mapping. The evolution of free chlorine concentration is illustrated with the help of a personal program applied to a network of large dimensions.

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