A New Intelligent, Dynamic and Real Time Management System of Sewerage

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Abstract : The current tools for real time management of sewer systems are based on two software tools: the software of weather forecast and the software of hydraulic simulation. The use of the first ones is an important cause of imprecision and uncertainty, the use of the second requires temporal important steps of decision because of their need in times of calculation. This way of proceeding fact that the obtained results are generally different from those waited. The major idea of this project is to change the basic paradigm by approaching the problem by the "automatic" face rather than by that "hydrology". The objective is to make possible the realization of a large number of simulations at very short times (a few seconds) allowing to take place weather forecasts by using directly the real time meditative pluviometric data. The aim is to reach a system where the decision-making is realized from reliable data and where the correction of the error is permanent. A first model of control laws was realized and tested with different return-period rainfalls. The gains obtained in rejecting volume vary from 19 to 100 %. The development of a new algorithm was then used to optimize calculation time and thus to overcome the subsequent combinatorial problem in our first approach. Finally, this new algorithm was tested with 16- year-rainfall series. The obtained gains are 40 % of total volume rejected to the natural environment and of 65 % in the number of discharges.

Keywords : automation, optimization, paradigm, RTC

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