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Getting the max out of past investments in sewer systems by using RTC

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We discuss a project in which water quality improvements of surface waters are realised by replacing local control of sewer pumps by central control. The paper focuses on the effect of implementation of real-time control in a specific group of sewer systems in the Netherlands, namely the systems that have been upgraded in the past as a result of new standards.

Since these upgrades were often solely based on straightforward so-called upgrade rules and theoretical simulation studies, a thorough analysis of the real life systems by means of measurements to study the system performance or calibrate the models was rarely performed. As a result the potential of many systems is not used to the full. Because of the structure of these systems, (suboptimal distribution of storage and pump capacities) the effect of RTC is much larger than would be expected in the case of a completely new design. But because of implementation of RTC, it was required to do this thorough analysis of the sewer systems. This study focuses on the estimation of this additional RTC effect. RTC both improves the return on past investments and provides the benefits of central information and control.

The project considered the sewer systems in the Hoeksche Waard area, south of Rotterdam, the Netherlands. Three RTC improvements have been implemented whereby the abovementioned effects have been achieved. There were many technological challenges to overcome during the project, such as relatively high rates of data communication needed for in systems with relatively small storage capacities, connections to multiple types of SCADA and information systems, the integration of meteo forecasts and the RTC backup architecture based on the use of multiple control modes.

The potential of the RTC has been proved as such in the HoekscheWaard area. On the basis of this implementation in a typical dutch sewer system, we expect RTC to have the same potential at a national scale.