Implementation of an integrated real-time control system of sewer system and waste water treatment plant in the city of Wilhelmshaven

A case study for integrated real-time control (RTC) of an urban drainage system in the city of Wilhelmshaven (Germany) is explained. The fuzzy based RTC strategy combines control of the sewer system and inflow to the waste water treatment plant. The main objective in controlling the sewer system is to reduce the number of overflows and the volume at a combined sewer overflow (CSO), located close to a bathing beach. Based on online measurements, the operation mode of two pumping stations is modified. This approach allows the safe activation of free storage volume in the sewer system without constructive measures. To avoid critical situations in the treatment process, the inflow to the treatment plant is automatically reduced to a defined value if high inflows to the treatment plant occur in combination with unfavorable conditions on the secondary clarifiers during rainfall events. The integrated RTC system has been operational for approximately one year.