WALCHEM

IWAKI America Inc.

Overview

The collection and treatment of stormwater for reuse is a growing market that enables collected stormwater to be used for a variety of applications including irrigation, non-potable applications (toilet flush water), process water or cooling tower feedwater (industrial), and occasionally even for potable (drinking) water. The Walchem WIND controller is an excellent controller option for many of these OEM systems that capture, measure, control, and deliver harvested rainwater treated as necessary for the intended use. The Walchem WIND controller enables complete system control from the simplest to more sophisticated systems. Its datalog of system parameters enables the user to monitor the amount of water processed so that ROI savings can be calculated.

Uses

The most popular use for harvested stormwater is for irrigation. Approximately 34% of all water use in the United States is for irrigation. Collected stormwater quality varies depending on the source (rooftop to stormwater culverts), some collected water can be simple to treat and others may require a WIND controller for correction of the water quality parameters such as pH, suspended solids and disinfection. The water quality can be usually be determined by simple tests.

Walchem Controllers are suitable for institutional or industrial systems. One common application for harvested storm-water is for toilet flush water. This application has become popular with schools and other small institutional facilities. A dye will normally be injected into the water collected to differentiate it from Potable water. These systems can be more complex if there is a tie in with city water systems, but there are many OEM system manufacturers who specialize in these systems and have made some standard designs very affordable.

In the Industrial environment, irrigation costs are generally insignificant compared to the costs for water used for cooling and process water. These applications often account for 80-90% of industrial water use. These systems are generally the most complex, with enhanced filtration, disinfection, recirculation and water quality monitoring, but as the above example, there are many companies that specialize in providing complete turnkey systems.

Control

Control for a stormwater harvesting system may include data collected from flow meters, level sensors, and water quality measurements which may include pH, conductivity, temperature, streaming current, ORP and/or turbidity. The planned use for the collected, treated water and the treatment process will dictate which measurements are important. The Walchem WIND (WebMaster Industrial) Controller is ideal with its ability to datalog all parameters, and communicate when there is an abnormal situation so that corrective action can be taken immediately.

An additional advantage of the Walchem WIND controller is its ability to interface directly with the analytical sensors so that calibration and other diagnostic information can be evaluated. The analytical measurements can provide important data such as: pH to insure the water will not cause corrosion or scaling in the piping systems; conductivity to monitor the total dissolved solids (TDS) in the water; turbidity to monitor the total suspended solids (TSS), ORP (Oxidizing Reduction Potential) if an oxidizing disinfectant (such as chlorine) is used. Temperature is important if the water is being used for a cooling process, and Streaming Current is a measurement for determining polymer concentration. Polymer aids in the settling or precipitation of the suspended solids.

The Walchem WIND controller will monitor the system parameters, and turn pumps on and off according to the desired operation.   The system may be set up to continuously recirculate from the clean tank until a specific water quality is achieved, and then on an occasional basis (i.e for 30 minutes every 4 hours).   If the water quality is not satisfactory, the controller can prevent the water from being sent to the process.

Communication is always an added benefit for the control system, so that alarm conditions can be quickly and effectively communicated, and diagnostic information obtained remotely when there is an issue.   The Walchem WIND controller offers many options for communication including html web-based communication over Cellular, or secure, encrypted point-to-point communication over Ethernet or WiFi.   The datalogs generated by the controller can be useful for analyzing system performance, and documenting savings obtained by having the system through both water and sewer savings.

Summary

Rainwater Harvesting is rapidly becoming important to institutions and industrial plants to reduce the amount and cost of purchased treated water.   As more builders move towards "Green Building", rainwater harvesting will become standard operating procedure.   The number of OEM's building these systems are increasing steadily, and the Walchem WIND controller provides an excellent choice for their control.