COLLECTIONS
WET WEATHER MANAGEMENT

Faced with the threat of permit violations or even fines, municipalities are under pressure to control wet weather events in a manner that minimizes storm water discharges into local water ways. Older cities with combined sewer systems are particularly vulnerable. Many different mitigation strategies, ranging from holding ponds to deep-rock tunnel projects, are being implemented as a means to store high flows during wet weather events. Following a storm event, stored flows can be addressed with freed up treatment capacity within the previously saturated system. Everything works seamlessly on paper, but in the real world, things do not always go as planned. The key to the entire wet weather management process is the actual means of controlling flows within the system. In order to implement this approach to match the design intent, the control structures that are responsible for the diversion of flows must be reliable, or the entire strategy is at risk.

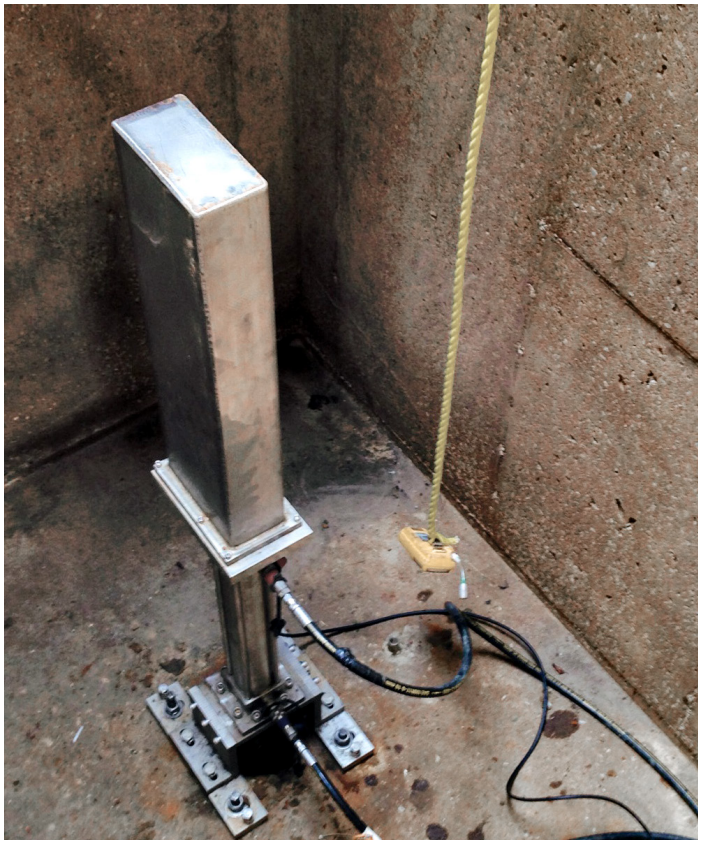
Gates are commonly used within a collection system to control flows. Automation of these gates requires an actuator that can reliably respond to changing conditions. During a wet weather event, the actuators on these gates are the critical aspect of the entire high flow management strategy. A failure of actuators to respond can cause big problems. Imagine a scenario where a collection system interceptor station has both influent control and diversion gates. The flow typically runs through the control gate that can be modulated to pinch off or shut off flows, perhaps using in-house storage upstream within the collection system. During very high flow events, the diversion gate would divert to a local water way or a storage area. The worst case scenario occurs if the control gate is pinched off/closed, but the diversion gate fails to open on account of an actuator failure. During an extreme wet weather event, such a failure could cause flooding upstream of this interceptor, potentially resulting in public or private infrastructure damage, as well as a black eye for the wastewater operations.

Problem

Electro-mechanical, multi-turn (electric) actuators are commonly employed to automate gate services within a collection system. Most of these gates are not critical, move infrequently and simply open or close (non-modulating). In these cases, electric actuators are typically sufficient. When an agency implements a high flow management strategy for their collection system, things can change. Suddenly, whether modulating or not, the reliability of the actuators controlling certain gates at critical junctures is imperative. Electric actuators are all gear based products, susceptible to wear over time due to stress & usage. The weight of lifting and holding a gate slide causes much of the strain. This is particularly true for flow under gates where slides are normally suspended in the air fighting gravity. There are also concerns when extending or lowering a gate. Electric actuators will come with torque switches designed to limit thrust output. The switches can be difficult to set up properly.

Electric actuators often incorporate the use of a brass bushing for attachment to the gate stem that is essentially a "sacrificial lamb" offered up during an over thrust condition. Complaints are common about thrust nuts breaking, resulting in a disconnection of the actuator from the gate, causing major problems. All electric actuators generally employ induction-type motors, which have a high in-rush of current. Too much current over time results in overheating of the motor or burnt out electrical components. As such, electric actuators have duty cycle limitations that are always specified on new project construction.

Use of induction motors also limits the speed output of the actuator, generally to a 5-10 seconds per inch of travel rate. In the real world, the actual service requirement often exceeds the duty cycle capabilities of electric actuators, resulting in common failures on gate applications. Bigger utilities often use larger gates with strokes in excess of 6 feet in length. An electric actuator may be limited to a max stroke time of 5 to 10 minutes for a larger gate (assuming no failure or rest period). During extreme wet weather events, this can be too slow to respond to rapidly change flow conditions. Given these limitations, electric actuators have an unreliable reputation for critical gate service within a complex collection system. An untimely actuator failure on a critical gate in the system can lead to significant flooding or flow control problems for a wastewater agency. The threat of such failures should cause pause when considering the selection of actuators for critical gate service.



Solution

REXA actuators are specifcally designed for critical severe service applications where faliures cannot occur. Our product has earned the reputation of being the most reliable actuator available. As wastewater operations adopt more complex high flow management strategies to combat wet weather events, REXA has the soluiton to prevent headaches caused by unrelaible actuators.

- Custom engineered to your specific application, indoors or outdoors.
- No size or speed limitations.
- Full hazardous area approvals and custom designed solutions for hard to reach, confined space or submersible areas.
- Continuous modulating duty cycle control for superior gate position accuracy.
- Fail-safe options that can position or hold any gate as required during a loss of power or emergency condition.
- 5 year product warranty and an expected 10-20 year maintenance free life-cycle.

No other actuator can provide consulting engineers and wastewater operations the peace of mind offered by REXA during 50 or 100 year wet weather events. Join other wastewater agencies who have learned from experience that the sure way to reliably implement your high flow management plan is to rely on REXA.

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