

WE'RE THERE FOR THE CITY OF CALGARY

MOBILTEX

INTRODUCTION

With a population of 1.24 million, Calgary is Canada's fourth-largest city and is trending toward further growth. With a 5,000-kilometre watermain network, the City continues to build and replace its system to meet demand, investing in smart corrosion management to protect the system and the public. This compelling case study shows how an early municipal adopter of data-driven technology from Mobiltex® is making better decisions about managing its cathodic protection system, optimizing staff and financial resources, and extending the useful life of its water infrastructure assets.

Mobiltex's affordable, data-driven IoT solution is helping the growing, smart City of Calgary monitor the performance of its cathodic protection system, preventing corrosion in its watermain network.

With a watermain network that has expanded to reach more than 5,000 km, the City of Calgary, Alberta is committed to running a healthy system. In many networks with metallic infrastructure, however, corroded pipes can lead to costly failures, disruptions in service, and unhappy ratepayers. To get ahead of potential failures, the City runs an aggressive anode retrofit and replacement program, waging war on watermain breaks. Since 1982, they have reduced breaks by a remarkable 85%. The annual investment in corrosion protection – on average, more than CAD \$2 million per year – is a key factor in this success.



CHALLENGE: PERFORMANCE MONITORING

To manage corrosion in Calgary's water network, the City employs galvanic and impressed current cathodic protection systems, which helps mitigate damage to metallic pipes and lengthen their lifespan. Galvanic cathodic protection is typically used on the metallic portion of the City's distribution pipes, while impressed current is reserved for the City's larger steel transmission mains, which are considered critical assets. While the results are effective, monitoring and maintaining a rectifier on an impressed system can be expensive. Manual inspections are slow and resource-intensive. They can also present safety issues, introduce human error, and, due to the need for regular field inspections, contribute to carbon emissions. Maintenance or repair often requires shutting down high-traffic areas, causing complaints from the public and business owners.

As well, damage to the system can lead to legal challenges. "Contractors often hit and break these systems. Sometimes we wouldn't know about it until a field technician completed a physical survey. It could be up to a month before we found an issue," says Rod Engel, Team Lead, Cathodic Protection, at the City of Calgary.

SOLUTION: MAKING BETTER DECISIONS WITH REALTIME DATA

Along with the rest of the world, the North American water industry is rapidly moving toward data-driven systems. As an early adopter of wireless data monitoring systems for water networks, the City of Calgary was well ahead of the curve. The City started working with Mobiltex in 2008. With the resulting data, Calgary has made great strides.

Now deployed throughout the City's network, Mobiltex's low-cost, fixed-function RMU2 Remote Monitoring Unit is designed for cathodic remote monitoring applications, ideal for automated monitoring of rectifiers, test points, and bonds. In Calgary, the units are paired with corView, Mobiltex's smart, secure web interface, which give inspection teams access to up-to-the-minute measurement data about their systems.

"The Mobiltex solution makes a huge difference," Engel says. "With real-time, accurate data collection and a central point of access, our staff gets immediate notifications if the cathodic protection system on critical infrastructure is not working correctly. They can quickly understand the demand across the system and prioritize critical issues for field inspections."

"The data we receive has helped us lower costs, minimize complaints from the public, and rapidly address damage by third parties. In a nutshell, it has made our lives a lot easier." Engel also cites the RMU2's ability to function in Calgary's extreme temperatures – Calgarians weathered the fourth-coldest February on record in 2019 – and seasonal changes.

"Our readings fluctuate with spring flooding and summer drought. The Mobiltex solution stands up to these conditions, giving us the capability to closely monitor our system so we can respond immediately," he says. "If there are ever any problems, Mobiltex provides us with excellent service and support."



CorTalk® RMU2 Remote Monitoring Unit

RESULTS: VALUABLE DATA FOR A SMART CITY

Already, Calgary monitors more than 121 km of steel feeder main, and Engel's team plans to expand this annually. The Mobiltex solution is now built into the specifications for any new infrastructure and critical mains. "The project is ongoing, but the idea is to monitor the entire steel critical feeder main system, eventually," Engel says.

The collected data is informing other departments, too. "We regularly share data with the asset managers, which helps them optimize timelines and budgets for O&M and replacement," he adds. "This way, we can get the most from the City's infrastructure."

As an early adopter of IoT technology in the water sector, Calgary is now able to look back at 11 years' worth of data. "Compared to the cost, the savings have been significant," Engel says. Dollar for dollar, the cost of protecting 10 km of pipe is the same cost as replace one kilometre, according to a 2015 article that appeared in the Calgary Herald. "Additionally," he adds, "real-time monitoring has made our team smarter. It has not only helped us benchmark our system's performance, but also given us the time to explore new ways to improve and optimize."

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