

Sept 12, 2014

Location: Toronto, Ontario, Canada

Facility Type: Multi-Residential Building – 369units

Overview

This case study details the findings on the installation of the H2minusO Flow Management Device (FMD) water saving technology at a Multi-residential site located in Toronto, Ontario. The positive results demonstrate the value-add our device continues to have on this facility and will continue to have. Virtually any facility that consumes water can benefit from our technology.

Background

Good water management requires accurate water measurement!

Water meters have changed little since their beginning and have a major fault in their design: air in your water lines is read as water by your meter. So for ALL end users, there is a very high probability your meter is billing you for water use, but not your actual consumption.

In a variety of ways, air can enter the water supplied by your water utility. Our H2minusO Flow Management Device (FMD) valve acts to minimize the air that would otherwise travel through your water meter and inflate the volume of water you ultimately pay for. All water pipes intermittently carry air along with water. As water travels from the water company to a home or business, air builds up in the water pipelines via internal and external processes. Since all water meters measure total volume, including both air and water, the blades in the meter turn faster than they would with just water alone. As a result, if you don't have our H2minusO valve, you pay more than necessary for your water.

What are the benefits for your business/organization/facility?

- Lower water bills
- Rapid return on investment
- Increased net operating income

The Technology: H2minusO - Water Flow Management Device





The Installation

The installation at this facility was for a 3” Valve that took approximately 4 hours. A typical install will usually take between 2-4 hours and in most cases, if there is a by-pass, water services will still be available to the facility. Once the installation is complete the water savings will start immediately.

The Project Analysis: *Pre and Post Water Consumption Analysis*

This measurement & verification analysis is based on actual billing information as well as daily readings pre and post installation of the H2minusO valve. Encompass was provided billing details for 24 months up to the Jan 2014 billing period. We also took detailed daily readings for 41 days prior to the install and then for an additional 119 days after the installation. The post data collection allowed us to conduct a detailed comparative Measurement & Verification (M&V). The analysis explored such things as consumption patterns, abnormal or suspicious periods of consumption, comparison of same period consumption year to year, consumption trending and impact off variables contributing to increased consumption.

Our analysis showed this facility exhibited consistent water consumption patterns year over year relative to any water retrofits completed. It is also important to note that the water consumption pattern was also increasing for each of the pre-installation measurement periods. Given the continued year over year increase, it was extremely important to establish what the current consumption pattern was relative to the prior two years. As shown in Table 1 rows 1 to 3, the pre-installation period established the baseline we used to measure the post installation results against. Row one in Table 1 establishes the baseline to be used for the analysis period. Rows 2 and 3 establish a trend showing consumption increasing – 1.69% from year 1 to year 2 and then an additional 4.28% during 41 day pre-installation measurement period. This represented nearly 6% increase in water consumption from year 1 to the day of the H2minusO valve installation.

Row 4 shows a 119-day post-installation consumption average of 186.27 m3, which represents a decrease in consumption of 8.65% compared to the 41 day pre-installation period. During the 119-day post installation analysis, we observed periods whereby the average daily consumption was less than 159 m3/day. No such number was recorded during any pre-installation period. These results show an average reduction in consumption of 17.63 m3/day compared to the 41 day pre-installation period, clearly pointing to improved meter reading efficiency.

Table 1: Period Analysis – Consumption

Measurement Type	Measurement Period - Start	Measurement Period - End	Average Daily Consumption (m3)	Average Daily Consumption Per Unit (m3)	Reduction in Water Consumption Reading
Consumption for - 362 (year 1 of analysis)	1-Jan-12	28-Dec-12	192.27	0.5210	0.00%
Consumption for - 369 (year 2 of analysis)	28-Dec-12	1-Jan-14	195.52	0.5299	-1.69%
Consumption for - 41 days (pre H2minusO retrofit)	11-Apr-14	22-May-14	203.90	0.5526	-4.28%
Consumption for - 113 days (post H2minusO retrofit)	22-May-14	12-Sep-14	186.27	0.5048	8.65%

Chart 1:

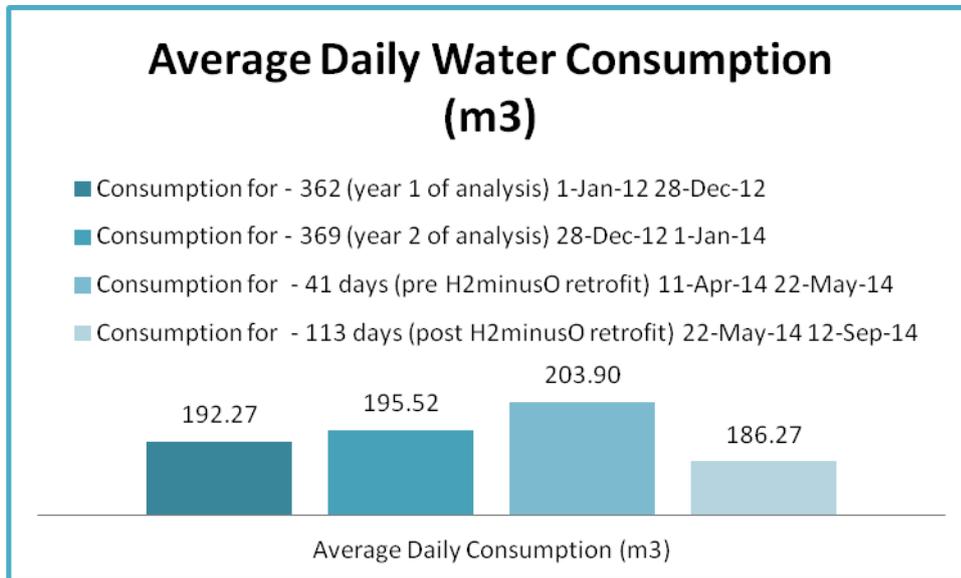


Chart 1 shows the daily water consumption recorded period over period based on water bills and actual meter readings.

Chart 2:

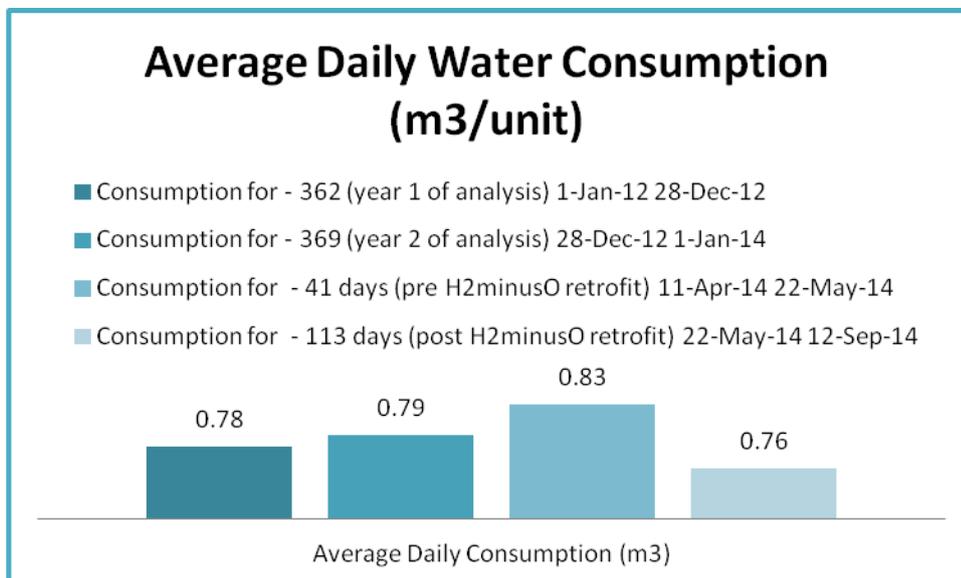


Chart 2 shows the daily water consumption per unit period over period based on water bills and meter readings.

Chart 3:

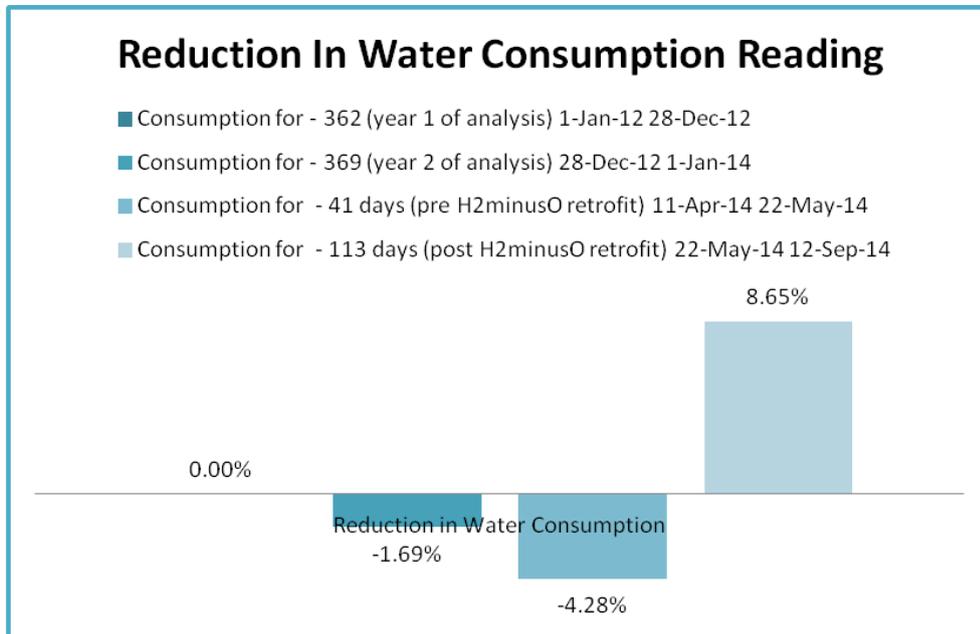


Chart 3 shows the actual percentage savings recorded period over period based on water bills and actual meter readings. The percentage savings can be applied directly to overall water cost to determine the reduction in water bills.

The Project Analysis: *Estimated vs Measured Water Consumption and ROI Analysis*

Based on the initial audit of the facility and analysis of 24 months of water bills, we determined that this building would yield a payback savings of approximately 7.0%. Factoring in the average 2012 and 2013 water rates and projected reduction in consumption billing, this building had an expected payback at .63 years. The post installation results and analysis indicate the projected savings will be 8.65% with a payback in .510years

Table 3: Estimated vs measured results

	Estimated Payback (yrs)	Measured Payback (yrs)	Difference (yrs)
Projected Payback	.63	.510	.12

Summary

The installation of the 3” H2minusO FMD will generate a reduction in water consumption readings based on the current existing conditions. Because the device treats the entire volume of water entering the facility, regardless of changes in the buildings consumption patterns and history, this facility will continue to experience average savings of 8.65% on their water consumption readings. Furthermore, the financial metrics and ROI are based on the average of 2012 and 2013 water rates, so the actual dollar savings on future consumption will increase provided water rates continue to increase.