

March 23, 2015

Location: Toronto, Ontario, Canada

Facility Type: Multi-Residential Building – 103 units

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 had 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 Sept 2014 billing period. We also took daily readings for 71 days prior to the install and then for an additional 31 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.

It is also important to note that this facility completed water saving toilet retrofits early in the beginning of the 2nd year of the analysis period (Jan 2014). This was well before the H2minusO retrofit, such that it had little impact on our M&V process. It was important, however, when comparing year over year and month over month consumption levels and patterns. Such water saving retrofits can skew the data analysis exercise and thus can cause a grossly inaccurate ROI analysis.

Our analysis showed this facility exhibited consistent water consumption patterns year over year relative to any water retrofits completed. So the installation of the H2minusO valve quickly demonstrated its impact by showing a deviation from this consistent consumption pattern. As shown in Table 1 rows 1 to 3, the pre-installation period, we established the baseline used to measure the post installation results against. It also allowed us to make a relative comparison of the pre and post toilet retrofits periods. Row 1 column 5 (Table 1) shows that the average daily per unit consumption, before the toilet retrofits, was 70% above the average for buildings of this profile (.45 m3/unit vs .77 m3/unit). After the toilet retrofits, there was a significant drop, in consumption, by nearly 18%. This still, however, left the average consumption per unit higher than the average for other similar profile buildings. Row 3 columns 4 and 5 (Table 1) shows the 71 day average of 65.74 m3 pre-installation of H2minusO and .638 m3/unit respectively. Row 4 column 4 and 5 (Table 1) shows a 31-day post-installation consumption average of 61.33 m3 or .595 m3/unit respectively. This represents a positive decrease in consumption of 6.71% compared to the 71 day pre-installation period. Row 2 column 7 shows that when measuring against comparable periods (after the toilet retrofits), this facility experienced a 19.85% reduction in the average daily consumption, clearly pointing to improved meter reading efficiency. This facility, in spite of the toilet retrofits, still experienced a minimum of 6.71% decrease in consumption.

Table 1: Period Analysis – Consumption

Measurement Type	Measurement Period - Start	Measurement Period - End	Average Daily Consumption (m3)	Average Daily Consumption (m3/unit)	Reduction in Water Bill (period/period)	Reduction in Water Bill (all Periods/ Post H2 Install)
Consumption for Comparable Period (60 days)	31-Jan-13	1-Apr-13	79.60	0.773	0.00%	22.95%
Consumption for Comparable Period (58 days)	31-Jan-14	31-Mar-14	76.51	0.743	3.87%	19.85%
Consumption for - 71 days (pre H2minusO Install)	8-Dec-14	17-Feb-15	65.74	0.638	14.08%	6.71%
Consumption for - 31 days (Post H2minusO Install)	17-Feb-15	20-Mar-15	61.33	0.595	6.71%	0.00%

Chart 1:

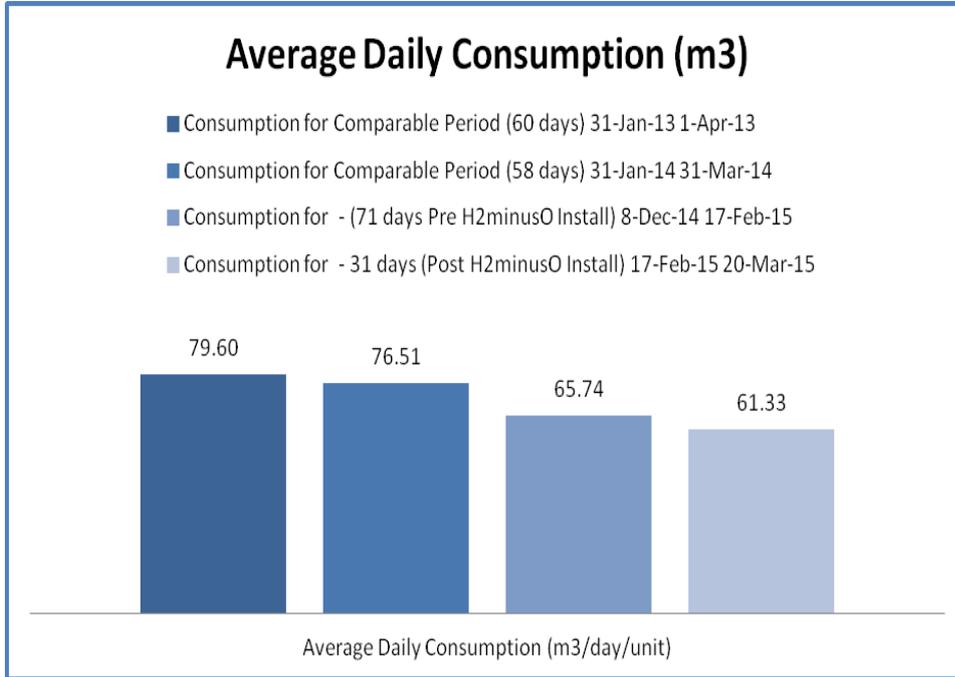


Chart 1 shows the daily water consumption recorded period over period based on water bills and actual meter readings.

Chart 2:

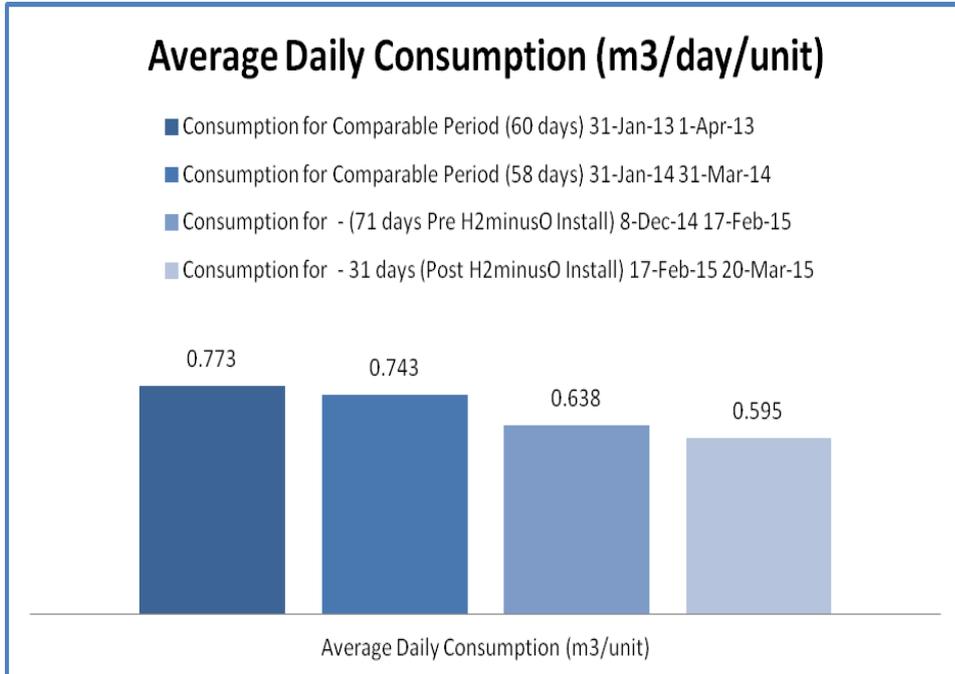


Chart 2 shows the daily water consumption per unit period over period based on water bills and meter readings.

Chart 3:

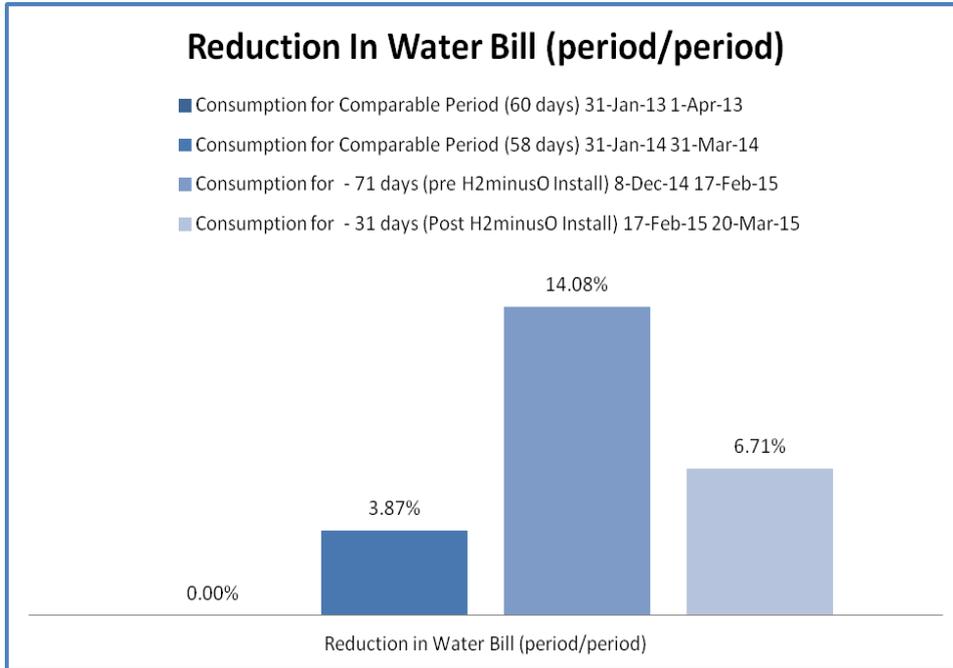


Chart 3 shows the impact of consumption from period to period comparison.

Chart 4:

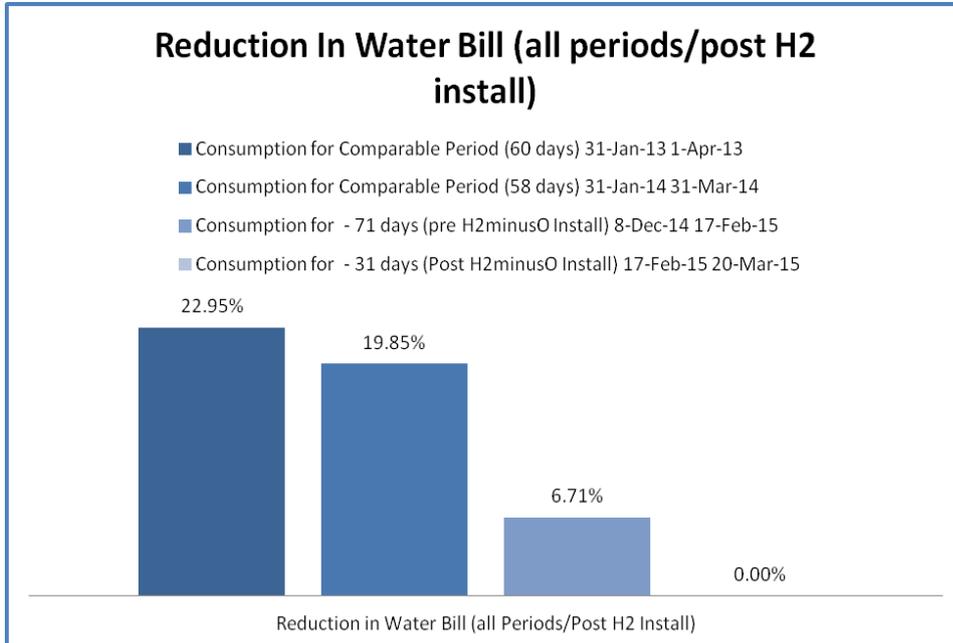


Chart 4 shows the impact of consumption between the post-H2minusO installation period and comparable preinstallation periods and post toilet retrofit periods



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 5.0%. Factoring in the average 2013 and 2014 water rates and projected reduction in consumption billing, this building had an expected payback at 2.24 years. The post installation results and analysis indicate the projected savings will be 6.71% with a payback in 1.54 years

Table 2: Estimated vs measured results

	Estimated Payback (yrs)	Measured Payback (yrs)	Difference (yrs)
Projected Payback	2.24	1.59	.70

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 savings of 6.71% on their water consumption readings. Furthermore, the financial metrics and ROI are based on the average of 2013 and 2014 water rates, so the actual dollar savings on future consumption will increase provided water rates continue to increase.