Oct 15, 2016

Location: Kitchener, *Ontario, Canada*

Facility Type: *Multi-Residential Building – 103 unit building*

Overview

This case study details the findings on the installation of the H2minusO Flow Management Device (FMD) water saving technology in Kitchener, 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!

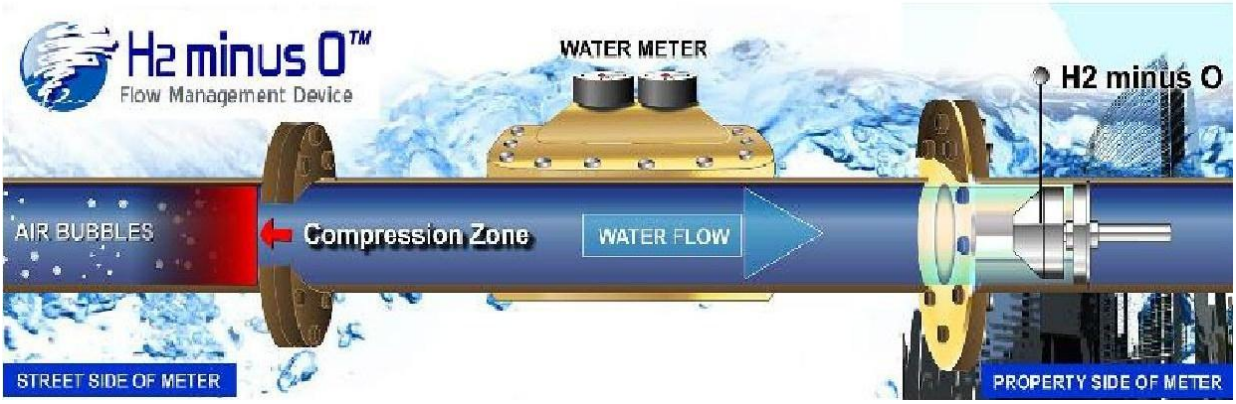
Water meters have changed little since their beginning and have a major fault in their design: air in your water lines is read as water by your meter. So for ALL end users, there is a very high probability your meter is billing you for water use, but not your actual consumption.

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



397 Freeman Crescent Oakville Ontario, Canada suite # 2
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The Installation

The installation at these facilities was for a 2-inch Valve that took approximately 4 hours. A typical install will usually take about 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*

Our measurement & verification analysis is based on actual billing information as well as daily readings pre and post installation of the H2minusO FMD. However, the historical data and initial readings for our M&V methodology had to be disregarded because shortly after the installation a new booster pump was installed. The initial M&V results indicated that something had changed in the environment because the measured results were far below our projections. Upon further investigation, we learned that a new booster pump had been installed shortly after we completed the installation of the FMD. This is a significant change to the installed environment and thus invalidated all the previous data sets. So we had to uninstall the FMD, reestablish a new baseline before reinstalling and completing our M&V methodology.

Once we knew the environment was stabilized, we took meter readings for 42 days prior to the install and then for an additional 35 days after the installation. The post installation data collected permitted us to apply our Measurement & Verification (M&V) analysis methodology.

As shown in Table 1 row 1 column 4 and 5, we established a pre-installation baseline of 35 m3/day or .34 m3/day/unit. In row 2 column 4 and 5 shows consumption decreased to 29.11 m3/day or .283 m3/day/unit. This represents a 16.82% decrease in consumption between the pre and post installation of the FMD. This result demonstrates that the FMD has, clearly, improved the meter reading efficiency.

Table 1: Period Analysis – Consumption for 1414 King Street

	Measurement Period - Start	Measurement Period - End	Average Daily Consumption (m3)	Average Daily Consumption Per Unit (m3)	Reduction in Water Consumption Reading
Consumption for - 42 days (pre H2minusO retrofit)	**28-Jul-16**	**8-Sep-16**	**35.00**	**0.340**	**0.00%**
Consumption for - 35 days (post H2minusO retrofit)	**8-Sep-16**	**13-Oct-16**	**29.11**	**0.283**	**16.82%**

Chart 1:

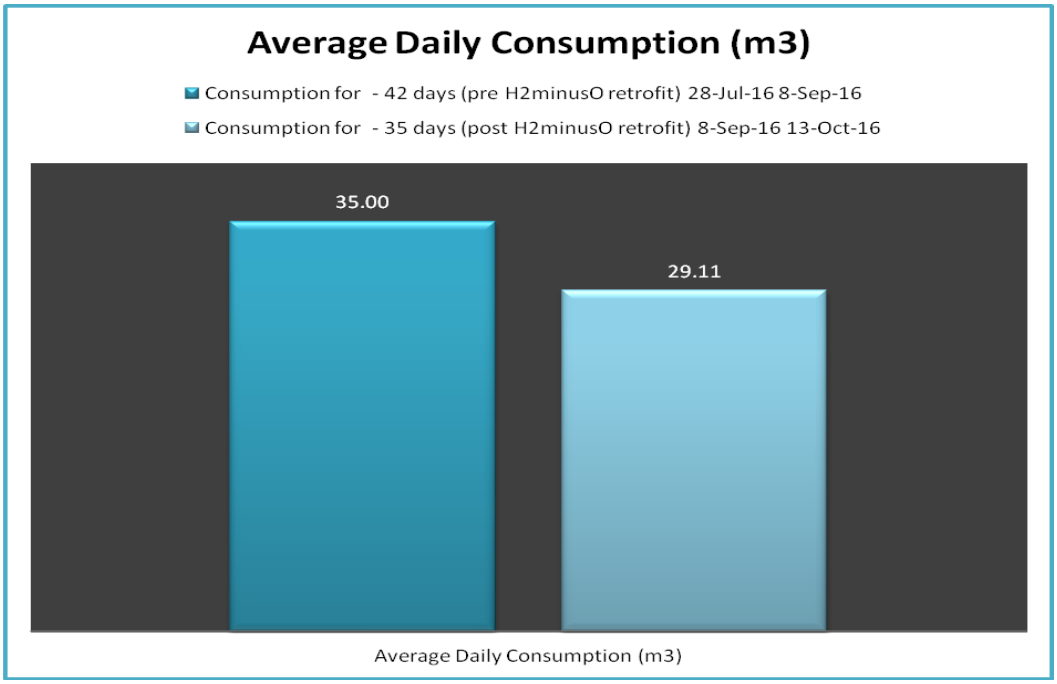

Chart 1 shows the daily water consumption based on actual meter readings.

Chart 2

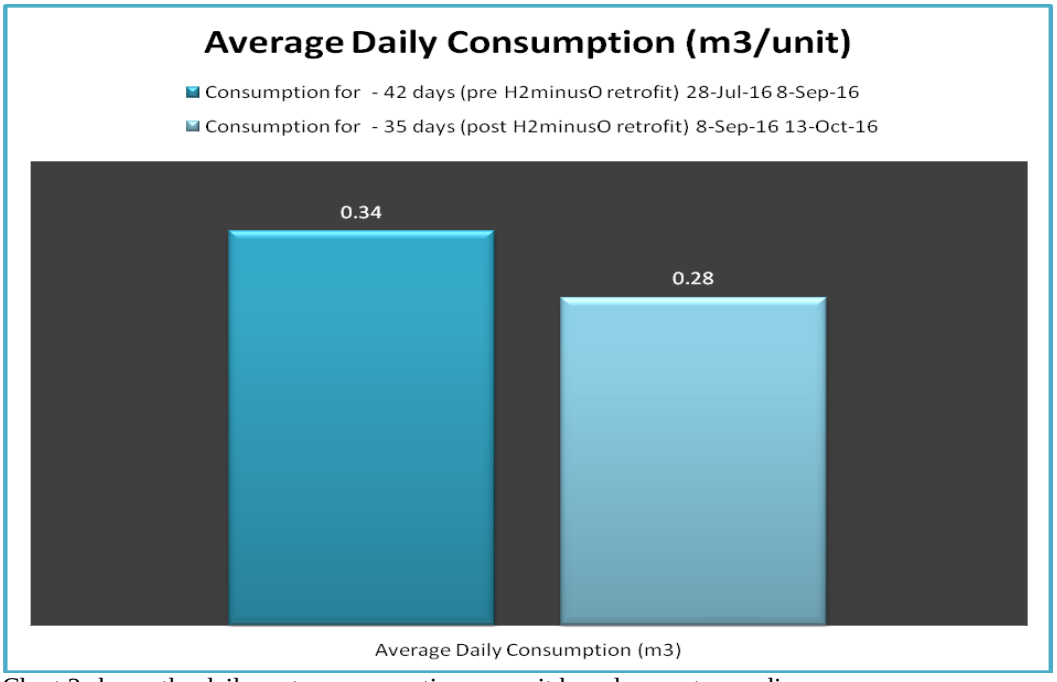

Chart 2 shows the daily water consumption per unit based on meter readings.

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Chart 3

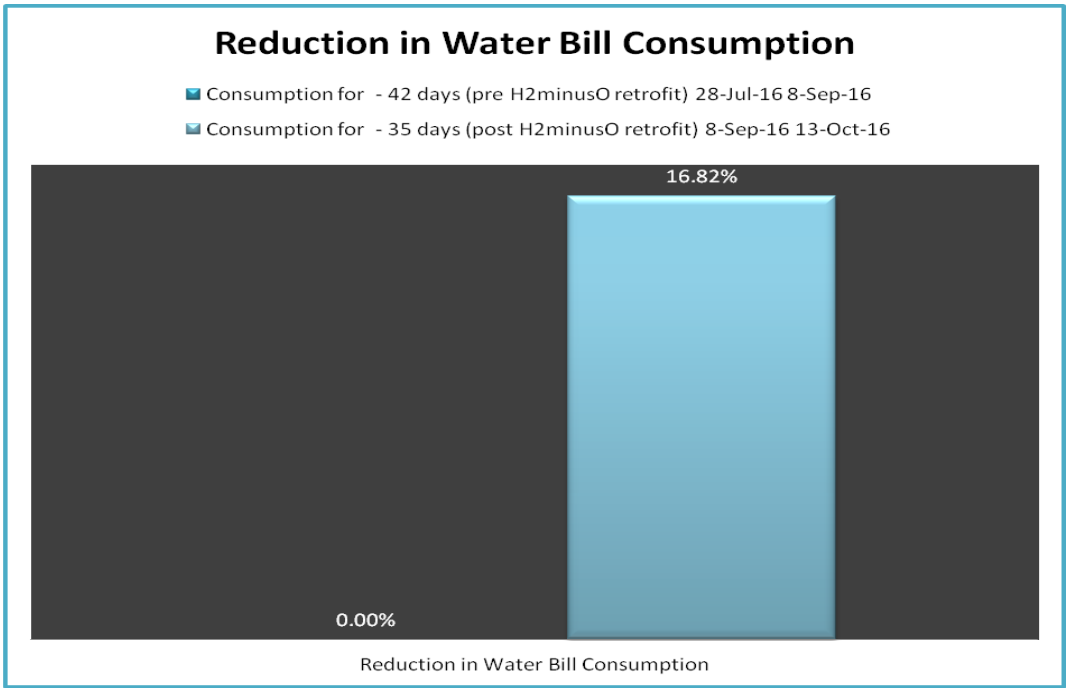

Chart 3 shows the impact on consumption post H2minusO installation.

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

Based on the initial audit of the facilities and factoring in the average 2014 and 2015 water rates; and projected reduction in consumption billing, this building had an expected payback of 2.94 years as shown in Table 2. The post installation results and analysis indicate the projected savings will yield a payback in 1.05 years.

Table 2: Estimated vs measured results

	Projected Payback (yrs)	Measured Payback (yrs)	Difference (yrs)
Projected Payback – 1414 King Street	**2.94**	**1.05**	**1.89**

Summary

The installation of the 2" 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 16.82% on their water consumption readings. Furthermore, the financial metrics and ROI are based on the blended water rate for 2014/2015. So the actual dollar savings on future consumption will increase provided water rates continue to increase.