



## **Measurement & Verification Findings**

### **Summary Findings**

The following Measurement and Verification (M&V) analysis demonstrate the positive effect the H2minusO Flow Management Device (FMD) has had on the meter reading efficiency at [REDACTED]. We were provided [REDACTED] consumption and [REDACTED] production data for periods immediately before and after the installation of the FMD. After analyzing the datasets, the meter reading efficiency showed a significant improvement. The ratio of water used (liter) to [REDACTED] produced [REDACTED] improved by an average of 17.04% with a payback in 2-months, well exceeding the ROI projections of 4% with a payback in 8-months.

### **Key Project Metrics**

One time project investment: \$38,300.00
Projected consumption 2017: 653,653 m3 (based on 1790.83 m3 * 365 days)
Cost per m3: \$2.23287
Install date: Sept 16, 2017

### **Pre-Installation**

Projected Savings: \$56,135.32
Projected Savings: 4.00%
Projected ROI (Yrs): .68 years

### **Post-Installation**

Measured Savings (\$): \$248,702.59
Measured Savings (%): 17.04%
Measured ROI (yrs): .154 Years



**Detail Findings**

Table-1 details the consumption patterns for the pre and post-installation periods from July 3, 2017 – Oct 24, 2017. Column 8 shows the average water consumption (l) required to produce [REDACTED] based on the start and end periods as indicated in columns 3 and 4. Rows 1, 2 and 3, column 8 shows the “measured” average [REDACTED] required to produce [REDACTED] in the periods before the FMD was installed. Rows 4 and 5, column 8 shows the “measured” average [REDACTED] required to produce [REDACTED] in the periods after the FMD was installed. In every period before the FMD was installed consumption measured between 2.06-2.28 [REDACTED] for [REDACTED] – always above 2-litres. In the 2 periods after the FMD was installed consumption measured between [REDACTED] of [REDACTED] for [REDACTED] – both below [REDACTED]. It is important to note that we did not have complete datasets for the post-installation period from Sept 20, 2017-Sept 25, 2017. However, the missing data over these 5 days would not have had a significant impacted the measured results.

Table 1: M&V Detailed Results

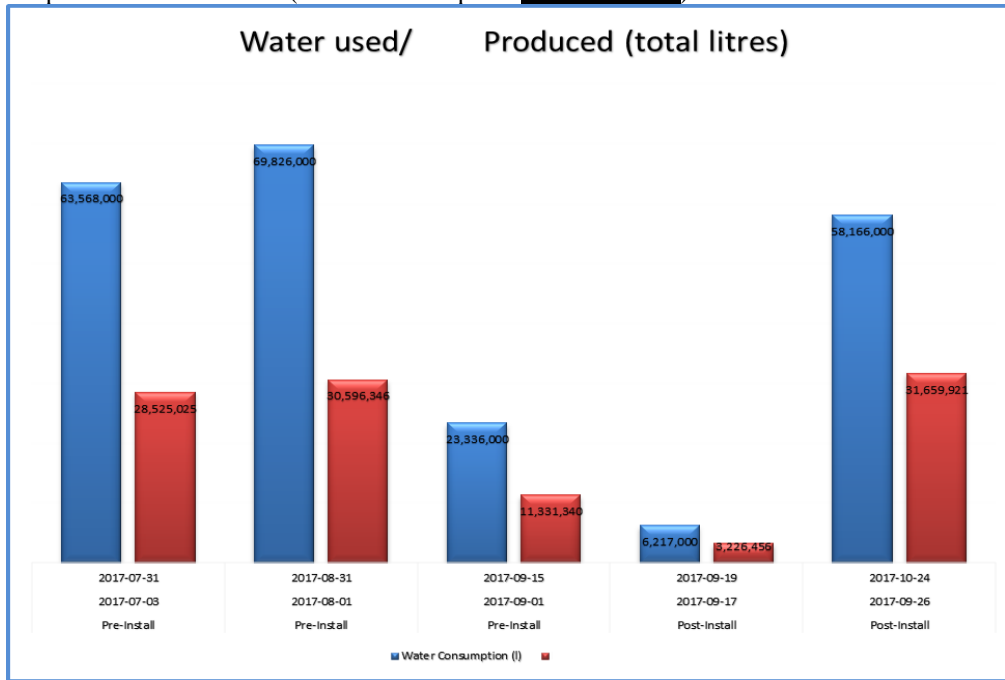
#	H2 Reference	Start Period	End Period	Days in Period	Water Consumption (l)	[REDACTED]	Litre Water/[REDACTED]
1	Pre-Install	2017-07-03	2017-07-31	28	63,568,000	28,525,025	2.228
2	Pre-Install	2017-08-01	2017-08-31	30	69,826,000	30,596,346	2.282
3	Pre-Install	2017-09-01	2017-09-15	14	23,336,000	11,331,340	2.059
4	Post-Install	2017-09-17	2017-09-19	2	6,217,000	3,226,456	1.927
5	Post-Install	2017-09-26	2017-10-24	28	58,166,000	31,659,921	1.837

Table-2 shows the summarized results for all the periods detailed in table-1. Although the number of days measured is twice as many during the pre-installation period relative to the post-installation period, it is the ratio between water used to [REDACTED] that is the important metric. Table-2 row-2 and column-9 show that the meter reading efficiency improved by 17.04%. That is the amount of water required to produced [REDACTED] decreased from 2.225 liters to 1.846 liters, representing significant savings on [REDACTED] water consumption. These results confirm the improved meter reading efficiency post-installation of the FMD.

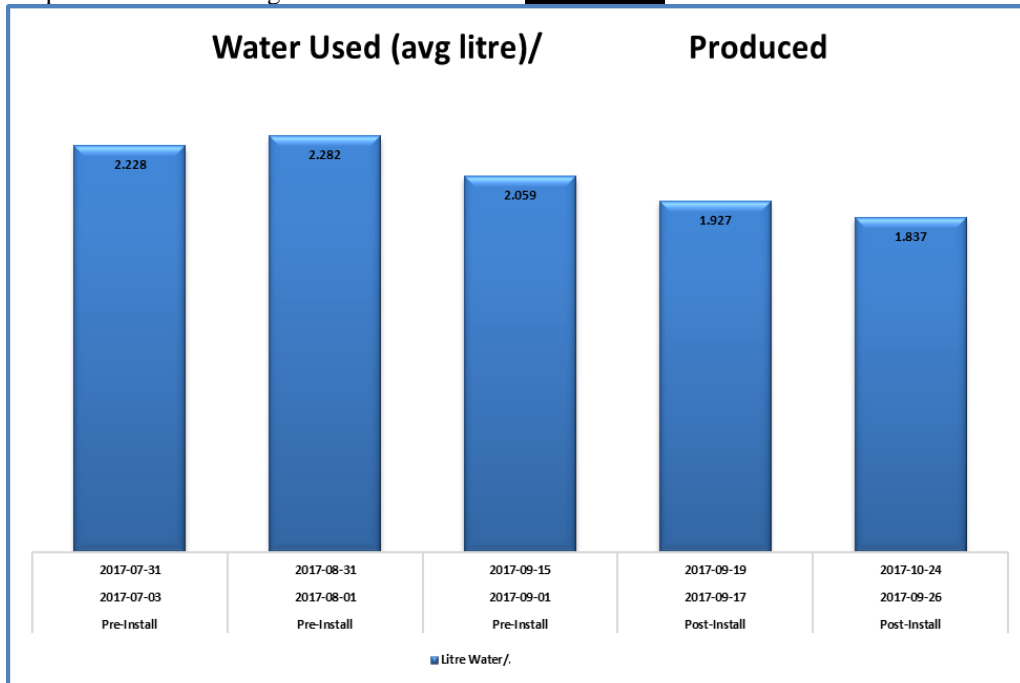
Table 2: M&V Summary Results

#	H2 Reference	Start Period	End Period	Days in Period	Water Consumption (l)	Milk Produced (l)	Litre Water/Litre Milk Produced	Change in Consumption (%)
1	Pre-Install	2017-07-03	2017-09-15	74	156,730,000	70,452,711	2.225	
2	Post-Install	2017-09-17	2017-10-24	37	64,383,000	34,886,377	1.846	17.04%

Graph 1: Pre/Post Periods (Water Consumption/ [REDACTED])



Graph 2: Pre/Post Average Litres of Water used/ [REDACTED] Produced





Graph 3: Pre/Post Average Litres of Water used/Produced

