Use Flow Control Valves before Water Meters to Optimize Water Use (Arc 2.7142)

(The analysis below was extracted from one of the assessment reports by the Clemson University Industrial Assessment Center (IAC). This is only an example recommendation and hence, not all the background information and sources for numbers are included here.)

Est. Water Savings	= ***3,870,040 gal/yr***
Est. Total Cost Savings	= ***$15,929/yr***
Est. Implementation Cost	= ***$3,050***
Simple Payback Period	= **2.3 *months***

Recommended Action:
It is recommended that a ZennValve Flow Management Device be installed to remove air from the water line, making it so the water meter only measures the water flowing through the pipe.

Background:
A flow management device, commonly referred to as an FMD, is a device that attaches to the main water supply line and removes trapped air from the line before it gets read through the meter (Figure 1). When water goes through the meter in the line, there are air bubbles caused by turbulence and turns in the pipe system that get included in the meter readings for volumetric flow rate. By removing this air, the meter is now only measuring water, which reduces the total volume needed. Case studies have been performed by ZennValve with a minimum guaranteed consumption reduction of 10%. The plant used 3,381,195 gallons in 2016.

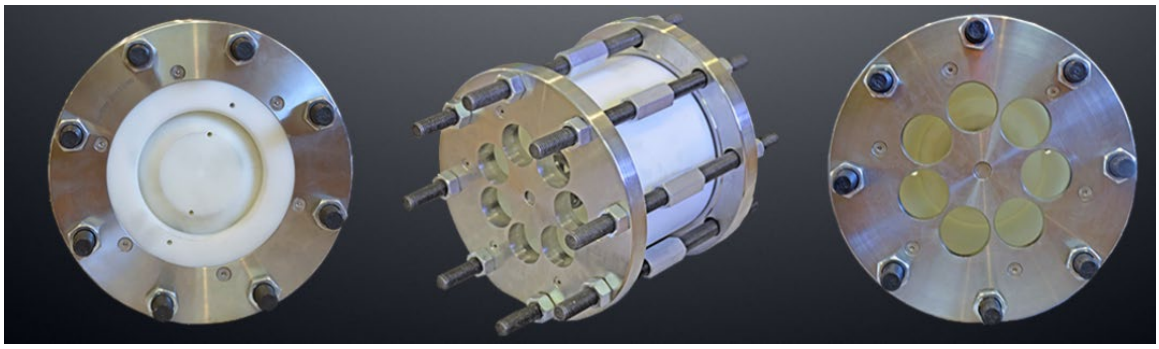

Figure 1. Picture of 6-inch XL Zennvalve

Anticipated Savings:
Savings were calculated using ZennValve quotes for an FMD to fit on a 2" water pipeline. Using their low-end 10% guaranteed reduction in volume, the savings were calculated.

Table 1: Flow Management Savings

Percent Reduction	Cost per Year	Gallons Used per Year	Annual Savings	Annual Reduction in Consumption
0%	$159,292	38,700,400gal	N/A	N/A
10%	$143,363	34,830,360gal	$15,929	3,870,040gal

$$\boldsymbol{TCS = \$15{,}929}$$

Implementation Cost:
The following relation shows the implementation cost by using the cost of the ZennValve FMD plus the installation cost using a contracted plumber:

$$IC = EC + PC \times H$$

Where:

IC = *Implementation Cost*
EC = *Equipment Cost*
PC = *Plumber Cost per Hour*
H = *Number of Hours*

$$IC = \$2{,}8050 + \$100/hr. \times 3\ hrs.$$

$$\boldsymbol{IC = \$3{,}050}$$

Simple Payback Period:
The *simple payback period*, *SPP*, associated with installation of the proposed lamps, ballasts, and occupancy sensors in a given area.

$$SPP = \frac{IC}{TCS} = \frac{\$3{,}050}{\frac{\$15{,}929}{yr}} \times \frac{12\ months}{year}$$

$$\boldsymbol{SPP = 2.3\ months}$$