PHOENIX GROUP
Government & Corporate Support Services

SMART VALVE™

THE CURRENT PROBLEM

Water meters do not have the technology to distinguish water from air, which means you're being charged for both water and air.

Water flowing through the meter activates an internal paddle that spins to measure the volume of water consumed. The opening and closing of fixtures and fluctuations in water pressure and flow rates causes variations in pressure and flow. This results in drops and surges to your water flow. Such variations, especially surges, cause your meter to over spin, resulting in inflated readings and overcharges.

Due to the growing demand for water, utility companies are increasing their pressures and exceeding the 65-psi standard. This deviation causes water surges through aging fixtures, triggering leaks through gaskets and seals. In addition to the increased air pressure (which is needed to push the water through the system), air also enters the water supply through multiple sources like tiny cracks along the many miles of water lines, breakages in the lines, and supply interruptions.

The surges and high pressures pushed by utility companies increase the flow to the fixtures, although you won't notice the change. You will end up using water you don't need—and paying for that water.

For additional information on problems with water see Addendum A.

THE INNOVATIVE SOLUTION

Install Smart Valve™, a flow management device that has the technology to control the flow of water on your side of the main water meter. You'll receive sufficient, comfortable water pressure that provides significant savings in water bills—all starting the moment the Smart Valve is installed. The technology also

controls the air that accumulates in the water pipes before it reaches the water meter. This means you won't pay for the air in the water lines.

THE PATENTED TECHNOLOGY

The Smart Valve™ is a patented, NSF/ANSI 61, and NSF/ANSI 372 precision-engineered water utility saving device for your water system. This seemingly simple yet extremely effective variable flow management device solves several problems inherent in water delivery. There are many dysfunctions in the current water delivery and usage system. Through research on water control and backflow principles, the Smart Valve™ was created, a breakthrough patented technology that overcompensates for these wasteful system deficiencies.

OTHER KEY INFORMATION

- No purchase or installation cost. We share the savings equally after installation.
- Guaranteed cost savings on your monthly water bill (water bills are reviewed at 60, 90, 120 and 360 days to adjust cost savings share); if you aren't seeing at least 10% in savings then we will reset the agreement to actual savings percentages and refund the difference.
- 100% made in the USA with United States-sourced stainless steel and Acetron GP.
- Easy installation with licensed and bonded plumbers anywhere in the USA
- Lifetime limited manufacturer's warranty
- 90-day satisfaction guarantee

SMART VALVE™

What it does and how it works…

The ***SMART VALVE™*** takes long established principals of fluid dynamics and applies them in a new and financially rewarding application.

How It Works ***Bubble Test***

How the SMART VALVE™ works…

Air Compression

The ***SMART VALVE™*** air compression benefit works on all single jet, multi jet, and turbine category positive displacement meters. These make up over 99% of all water meters in use. The science is based upon Boyle's Law regarding gas pressure and volume and Le Chatelier's Principal of volumetric dynamics. The ***SMART VALVE™*** is installed in your water line on your side of the meter as close to the meter as possible. The variable spring loaded plunger maintains a constant pressure on the oncoming water supply. This 'backpressure' manifests itself into a high pressure point on the other side of the water meter. When air reaches this pressure point, the air becomes compressed and no longer maintains its volume. It passes by the water meter in this compressed state until after it passes through the ***SMART VALVE™*** and soon returns to its original uncompressed state. The ***SMART VALVE™*** does NOT remove the air, it just compresses it so the water meter can't measure it.

A common example of entrained gasses is shaking up a soda bottle. The ***SMART VALVE™*** is like the bottle cap keeping the system pressurized. The gasses are in there but you can't see them until you remove the cap, and neither can your water meter. You won't notice any difference in the water coming into your facility, but you will notice that your water meter is now spinning less.

Pressure and flow stabilization

Other ways in which water meters can be inaccurate are during very high, low flow or pressure surges. Water meters are designed to be accurate within a specific flow range. If the flow exceeds this range it can 'over-spin' causing your readings to be inflated. An example is when your water is off then something is opened, this creates an initial surge then a pressure drop. These surges and drops can also be caused by variability in the municipal water supply.

The ***SMART VALVE's™*** proprietary spring loaded technology acts as a 'shock absorber', eliminating these peaks and valleys and creating a smooth, even flow that keeps your meter readings accurate and protects against damage that can occur from a surge.

Reduced Consumption

Any time you insert anything into a water line it will act as a flow restrictor to some extent. The ***SMART VALVE™*** creates a minimal amount of flow restriction that will save the user additional money in non-volumetric water uses such as showers, sinks, hoses and the like. This can also be used to convert an entire facility to a water conservation low-flow profile without the need to install individual flow regulators or replace older fixtures.

Furthermore, almost all water devices are designed for approximately 65 psi water supply. A higher psi can cause excessive water use and leakage at seals and gaskets that often goes undetected. In these cases, a pressure reducer is typically used to maintain a 60-65 psi to the facility. Unfortunately, these devices require maintenance and often fail. The ***SMART VALVE™*** acts as a pressure reducer in high-PSI water systems, eliminating the problems caused by excessive water pressure.

Other Benefits

By virtue of its' design, the ***SMART VALVE™*** acts as a secondary back flow preventer to protect the municipal water supply. This is becoming more and more important as municipalities seek to better protect our water reserves from contamination.

Ideal Applications

The ***SMART VALVE™*** is ideal anywhere there is a high volume of water usage. This includes Hospitals, Office Buildings, Hotels, Condominium/Multi-Family, Industrial, Correctional and Irrigation systems to name a few.

How does the Smart Valve™ save money?

In a number of ways:

- It stops you from being charged for any volume of air present in your water supply by compressing the air before it reaches your meter.
- It keeps your water meter operating within its designed flow range.
- It eliminates over-supply caused by higher-than-desired city pressure.

How much money can be saved?

The amount of money you will save is determined by several factors including:

- City pressure (PSI)
- Flow rate and flow capacity (GPM)
- The amount of air in the line at any given time
- Facility in which installed. A facility that has high water usage, such as a hospital or large office building, will have a higher savings proportionally than a facility with lower water usage.

The actual savings you will experience is impossible to accurately predict and will vary with the conditions above. As an average our customers see +/- 15% savings, but we have seen users have savings as high as 35% and as low as 8-9% in any given month. What's important is that once you install the SMART VALVE™ it begins working 24/7/365, and you will realize the full amount of savings available within your water supply without having to ever think about it again, and it will keep saving you money as long as it is installed in your water line.

Does the Smart Valve™ really work?

Yes, it really does work. It has provided savings on all facilities in which it has been installed. We can provide case studies upon request.

We guarantee it will save you money!

For FAQs: See Addendum B

ADDENDUM A

The problems with water…

There are a number of potential problems inherent in water delivery and usage that can impact your water consumption and water costs. The majority of these concerns revolve around water system pressure (PSI) and flow rate (GPM).

- Water fixtures in your building are typically designed for water pressure of no more than 65 PSI. The water delivered by your municipality (city) often has much higher pressure. This results in more water being pushed through your fixtures, leaking through seals & gaskets that are designed for 65 PSI and increased maintenance costs.
- Along with the volume of water passing through your water meter is a volume of air. The lower the water pressure the more volume the air will have. The problem is that 99% of water meters' measure only volume, regardless if that volume is liquid or gas.
- Water meters are designed to be accurate within a specific flow range (GPM). If the flow exceeds this range it can cause the meter to over-spin.
- City water pressure can fluctuate significantly causing surges and pressure drops. This will cause the meter to over-spin and damage water systems & equipment. Surges also occur anytime you go from no flow (static) to flow (dynamic), such as when you turn on and off a hose.

ADDENDUM B

FAQs

How does water pressure affect consumption?

The higher the pressure is in a system the more water that will be 'pushed' through the system. We are seeing higher and higher city pressure readings as municipalities grow and must deliver more and more water through their existing pipes. The only ways to deliver more water is to replace the water system with larger pipes, which in most cases is not a feasible option, or to 'crank up' the pressure.

This is a problem everywhere due to the fact that water fixtures are designed for pressure no higher than 65 PSI, but even more so in older facilities where there is no pressure regulator or water fixtures were not designed for water conservation.

Is there really air in the water system?

There is no debate that air flows through your water line along with the water. Water systems are designed with this fact in mind to try to prevent potentially serious problems such as air blocks and hammering. The only real question is how much air? The amount is not constant and is affected by things such as pressure, temperature, and by the design and condition of the water supply system. It can vary from a little to a lot at any given time.

How does air get into the water line?

As well as being released from entrainment in water, air can be physically introduced to water distribution systems. Water providers work to prevent outside air infusion, however, air is inevitably drawn into the line through:

- Tiny cracks
- Poor or damaged joint seals and leaking flange connections

- Temperature, flow velocity and pressure changes generate a surprising amount of air volume. As water travels through a pipeline, it flows in eddies and swirling currents. This occurs especially in aging cast iron pipes that provide turbulent routes for water flow

- Pumps that are positioned throughout the distribution system which create pockets of air in the pipeline as a result of the vortex action of pumps

- Surprisingly common main line breakages which can introduce huge amounts of air into the water system. The City of San Diego reported at least NINETY WATER MAIN BREAKS in 2013 alone!

How am I paying for the air?

The most common water meters use a method known as Positive Displacement to measure water consumption. These meters measure the volume of fluid moving through the line. This volume measurement, however, is not limited to just water and instead measures the total volume of both water and air.

Does air still go through the water meter?

The SMART VALVE™ does NOT remove the air. It simply compresses the air before it reaches your meter. Once compressed, the air flows through the meter undetected. After the air passes through the water meter and the valve it soon returns to its original state.

Will the Smart Valve™ affect the water pressure?

On systems at or below 65 PSI the SMART VALVE™ has a minimal effect on the water pressure (1% to 7% depending on local conditions) and is not noticeable to the average user. On systems above the recommended 60 psi and where you do not have a working pressure reducer you may notice the pressure reduction because your pressure was too high prior to installing the SMART VALVE. This confirms your savings.

Is the Smart Valve™ safe and legal to install?

The SMART VALVE™ is legal to install on the USER side of the water meter. Installation must be done in conjunction with all applicable laws, codes and standard plumbing practice in your area.

The SMART VALVE™ is constructed of extremely strong and durable Acetron GP and stainless steel, and is compliant with NSF/ANSI 61 and low-lead standards as safe for contact with potable water.

How reliable is the Smart Valve™?

The SMART VALVE's only movement function is the compression of a spring and the associated opening and closing of a gasket-less plunger and housing. The valve is made of Acetron GP and stainless steel. Acetron GP is self-lubricating and has strength characteristics close to those of steel. The SMART VALVE comes with a 10-Year Manufacturer's Warranty, however the valve should continue to work reliably for much longer.

Wouldn't an all metal Smart Valve™ be better?

No, it would be much more expensive, need maintenance and be likely to fail prematurely. Metals can corrode, will accumulate particulates such as dirt or scale, and require gaskets/seals which will fail over time. The Smart Valve is made primarily from Acetron GP, the absolute ideal material for this type of application. Acetron® GP is a general purpose copolymer acetal and is the only porosity-free acetal product available today. Investments in process technology now provide the performance and machinability of acetal without center core porosity. The in-line photometric quality procedure assures every sheet and rod is porosity-free as measured by a dye penetrant test making it the preferred acetal for food contact and medical applications. Acetron® GP natural is FDA, USDA, NSF, Canada AG and 3A-Dairy compliant.

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