



Smart Valve™

Engineering Design & Specification Guide

Engineering Better Water Systems

For consulting engineers, facility owners, and water system designers



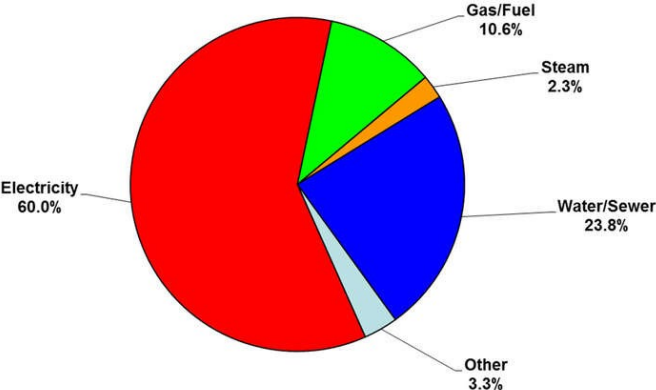
Passive hydraulic optimization | No power | No programming | No routine maintenance

Why Consulting Engineers Specify Smart Valve



A compact water-system optimization device that addresses an often-overlooked utility cost.

U.S. Lodging Industry Mix of Utility Expenses - 2014



Source: PKF Hospitality Research, a CBRE Company, *Trends® in the Hotel Industry*

Utility Cost Impact

Water/sewer is a major lodging utility expense and a direct operating cost.

Passive Design

No power, software, programming, controls, or routine maintenance.

Retrofit Friendly

Installed in the mechanical water system by a licensed plumber.

Engineer Ready

NSF/IAPMO certifications, product data, warranty, and guide spec.

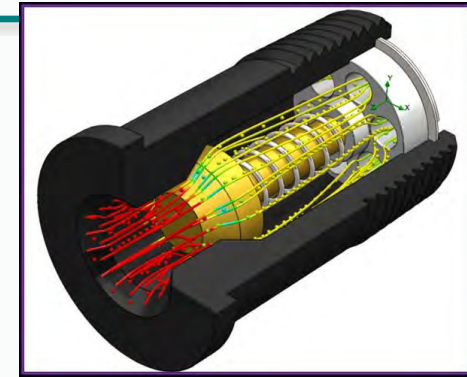
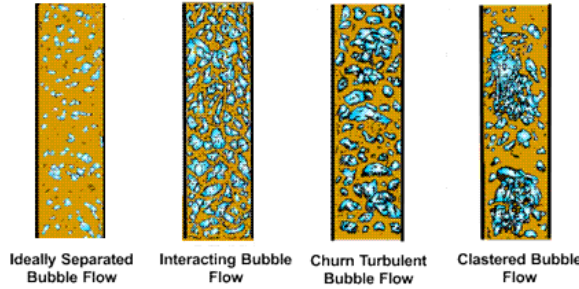
CFT role: engineering support, sizing, installation guidance, commissioning support, and measurement & verification.

Typical applications

- | | | | |
|-------------|------------|--------------|------------|
| Hotels | Hospitals | Universities | Municipal |
| Multifamily | Irrigation | Commercial | Industrial |

The Engineering Problem

Air, turbulence, pressure variation, and water-meter behavior can create unnecessary billed water and system stress.



Positive displacement meters

Many meters measure total volume passing through the meter, not only liquid water.

Entrained air and turbulence

Flow quality and pressure changes can affect meter performance and downstream delivery.

Pressure surges

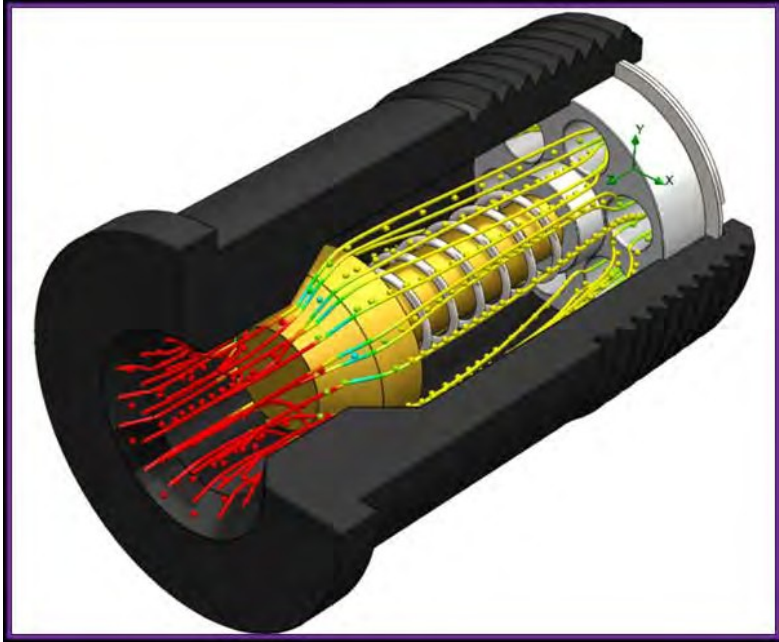
Sudden demand changes can contribute to over-spinning, vibration, and equipment wear.

Engineering Guidance

Specify a passive hydraulic device that stabilizes system flow near the meter.
Avoid adding electrical controls, programming, or ongoing maintenance obligations.
Provide potable-water certifications and a clear installation location for contractors.

The Smart Valve Engineering Solution

Externally adjustable hydraulic valve technology for meter-side flow stabilization.



Cutaway rendering shows the internal spring-loaded, externally adjustable flow management assembly.

Externally adjustable

Field tuning after installation without water shutdown.

Passive hydraulic device

No electrical supply, controls, software, or network connection.

Certified potable water

NSF/ANSI/CAN 61 and 372 listings support specification.

Sized to pipe

Standard product range from 3/4 inch through 12 inch.



Product configurations include threaded and flanged bodies for common commercial and institutional water systems.

Typical Installation Arrangement

CFT design note: install after the backflow preventer when present, and before PRVs/booster pumps where practical.



Municipal main -> customer side water system

Preferred location

Downstream of backflow preventer, upstream of pressure-reducing valves and booster pumps where practical.

Contractor scope

Licensed plumber or mechanical contractor installs per manufacturer instructions and local code.

Commissioning

Restore service slowly, vent air, check leaks, verify fixture operation, and document setting.



Documented Performance

Representative results from healthcare, hospitality, and irrigation applications.



Get Started Saving on Your Water Bills

CASE STUDY

Vanderbilt University Medical Center

1161 21st Ave S, Nashville, TN

Annualized Savings

\$90,000

Gallons

551,276

23% Reduction

"...the Smart Valve appears to be making a significant impact. Through 7 months we have experienced a savings of about 23%, equaling to more than \$67,000. If this trend continues, we should see a savings in excess of \$90,000/year.

- Mike Gable, P.E., CEM, CHFM



Property Description:

Multi-Purpose Medical

Water Source:
Municipal

Installed:
4/1/2022

Meter Size:
6 inch

Consumption prior to installation:

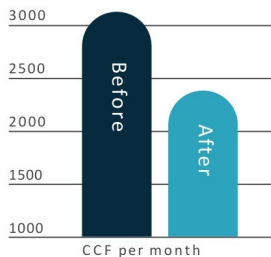
Dates/Time Period: May 2021 - Aug 2021

CCF per month:
3,210

Consumption after installation:

Dates/Time Period: May 2022 - Aug 2022

CCF per month:
2,473



Out of respect for the client, please do not attempt to make contact without obtaining permission CFT, LLC, owner of the Vanderbilt account.

CFT, LLC 1013 Signal Road, Signal Mountain, TN 37377

23%

VUMC reduction

\$90k

Annualized savings

551k

Gallons saved

10-15%

DoubleTree savings

Vanderbilt University Medical Center

6-inch installation. Reported 23% reduction and more than \$67,000 in seven months.

Vista Del Sol HOA

Landscape irrigation case study reports a 32% reduction in gallons per day.

DoubleTree Tarrytown

Hotel manager testimonial reports consistent 10% to 15% monthly water bill savings.

Use as a screening tool

CFT recommends reviewing 12 months of water/sewer bills before final sizing and ROI projection.

Performance varies by site, water system configuration, meter characteristics, pressure conditions, and usage profile.

Certifications, Warranty & CFT Support

Larger certification documentation with engineering support and warranty summary.



NSF/ANSI/CAN 61

IAPMO RESEARCH AND TESTING, INC.
5001 E. Philadelphia Street, Ontario, CA 91761 • Phone (951) 472-4100 • Fax (951) 472-4244 • www.iapmo.org



CERTIFICATE OF LISTING

IAPMO Research and Testing, Inc. is a product certification body in which its product certification system includes inspection and testing of samples taken from the supplier's stock or from the market or a combination of both to verify compliance to the requirements of applicable codes and standards. This activity is coupled with periodic surveillance of the supplier's factory and/or installation as well as the assessment of the supplier's Quality Assurance System. This listing is subject to the conditions set forth in the characteristics below and is not to be construed as any representation, warranty or guarantee by IAPMO Research and Testing, Inc. of the product acceptance by Authorities Having Jurisdiction.

Issued To:

Flow Dynamics LLC
5674 EL CAMINO REAL SUITE A CARLSBAD, CA 92008, United States

Product:

Drinking Water System Components - Health Effects

Products are certified to the following standard(s):
NSF/ANSI/CAN 61-2023

File Number: N-8104

Drinking Water System Components - Health Effects

NSF/ANSI/CAN 372

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LEAD FREE

Issued To:

Flow Dynamics LLC
5674 EL CAMINO REAL SUITE A CARLSBAD, CA 92008, United States

Product:

Lead Free Plumbing Products

Products are certified to the following standard(s):
Section 1417(d) of the Federal Safe Drinking Water Act, and
The lead content requirements of Section 116375 of the
California Health & Safety Code
NSF/ANSI/CAN 372-2024

Lead-free plumbing products; weighted average lead content compliance.

CE / WRAS Documentation



Working for your water needs™

CE Declaration of Conformity - Smart Valve™

Drinking Water Supply Regulations Flow Dynamics Smart Valves have been examined and tested and found to comply with the requirements of the applicable standards, in conformity with the requirements of the European Union and the European Union Drinking Water Directive (98/83/EC) (Public Health Protection).

Regulation (EU) No 1831/2003 and Directive 2002/91/EC (Energy Performance of Buildings) Flow Dynamics Smart Valves are certified to the requirements of the applicable standards, in conformity with the requirements of the European Union and the European Union Energy Directive (2002/91/EC) (Energy Performance of Buildings).

The use of Flow Dynamics Smart Valves These products are suitable for managing the pressure of water in pipes in water supply systems for the use in the following application areas meeting pressure, temperature and flow rate.

The Declaration of Conformity Flow Dynamics LLC with registered office at 5771 Palmer Way, Carlsbad, California, USA 92008, and this certificate is part of the same address.

Flow Dynamics LLC has been granted a declaration of conformity with the declared parameters and specifications of pressure, temperature and flow rate (as marked on the label and specification sheet) of each and every model.

This declaration of conformity is based on sole responsibility of the manufacturer.

On behalf of Flow Dynamics, LLC

Jan Chavakis, CEO

February 12, 2024

Flow Dynamics LLC - 5771 Palmer Way, Carlsbad, CA 92008 - 760-431-1000

Pressure, potable water, and international conformity documentation.

Warranty

10-year manufacturer warranty against defects in materials and workmanship.

Satisfaction Guarantee

90-day no-questions-asked customer satisfaction guarantee from Flow Dynamics.

CFT Engineering Support

Selection, sizing, contractor coordination, commissioning, and M&V support.

Submittals

Product data, certifications, startup records, warranty and O&M manuals.

CFT positions Smart Valve as part of an engineered water-system optimization program, not a stand-alone commodity product.

Guide Specification - Executive Summary

Complete CSI guide specification follows this brochure section.



CSI SECTION 22 11 16

Smart Water Flow Stabilization Valves

Basis of Design

Smart Valve™ Generation 2 manufactured by Flow Dynamics, LLC. Authorized supplier: CFT Energy Saving Solutions.

Performance Requirements

Potable water service; NSF/ANSI/CAN 61; NSF/ANSI/CAN 372; 250 psi pressure documentation.

Size Range

Threaded: 3/4 in. through 2 in. Flanged: 3 in. through 12 in.

Installation

Install on user side of water meter; immediately downstream of BFP where practical; upstream of PRVs/boosters when practical.

Startup / Calibration

Restore service slowly, vent air, inspect for leaks, verify operation, document field calibration.

Warranty / Closeout

Ten-year warranty; submit product data, certificates, startup reports, calibration records, and O&M manuals.

Complete copy-ready CSI guide specification is included in the appendix slides that follow.

Appendix A - CSI Guide Specification (1 of 3)



Copy-ready guide specification language for engineers and project manuals.

SECTION 22 11 16 - SMART WATER FLOW STABILIZATION VALVES

PART 1 - GENERAL

1.01 SUMMARY

A. Furnish and install Smart Water Flow Stabilization Valves.

B. Applications: Domestic cold water systems, irrigation systems, commercial, municipal, educational, hospitality, and multifamily facilities.

C. Exclusions: Fire protection systems and dedicated fire service mains.

1.02 RELATED SECTIONS

22 05 00 - Common Work Results for Plumbing

22 05 23 - General-Duty Valves for Plumbing Piping

22 11 00 - Facility Water Distribution

1.03 REFERENCES

NSF/ANSI/CAN 61; NSF/ANSI/CAN 372

1.04 SUBMITTALS

Product data, shop drawings, certifications, startup instructions, warranty documents, calibration records, and O&M manuals.

1.05 QUALITY ASSURANCE

Manufacturer shall specialize in water flow stabilization devices.

Installation shall be performed by a licensed plumber or qualified mechanical contractor. Product shall be manufactured in the USA.

Product shall be NSF 61 and NSF 372 certified. Protected by U.S. Patent No. 8,707,981.

1.06 WARRANTY

Ten (10) year manufacturer warranty against defects in materials and workmanship.

1.07 BASIS OF DESIGN

Smart Valve® manufactured by Flow Dynamics, LLC. No substitutions permitted. Authorized Supplier: CFT Energy Saving Solutions, 1013 Signal Road, Signal Mountain, TN 37377, 615-756-9028, Tom Clarke, tom@cftenergysavings.com.

Appendix A - CSI Guide Specification (2 of 3)



Copy-ready guide specification language for engineers and project manuals.

PART 2 - PRODUCTS

2.01 SMART WATER FLOW STABILIZATION VALVES

Provide Smart Valve flow stabilization valves designed for potable water and irrigation systems. Externally adjustable, factory preset, field calibratable, and adjustable without service interruption.

2.02 MATERIALS

Acetron GP body components. Stainless steel internal components. FDA-approved O-rings. Aluminum support members not in contact with potable water.

2.03 CERTIFICATIONS

NSF 61. NSF 372. IAPMO Research and Testing.

2.04 CONNECTIONS

3/4-inch through 2-inch female NPT threaded. 3-inch and larger flanged.

2.05 SIZE RANGE

Threaded: 3/4-inch, 1-inch, 1-1/2-inch, 2-inch. Flanged: 3-inch, 4-inch, 6-inch, 8-inch, 10-inch, 12-inch.

2.06 DIMENSIONAL SCHEDULE

2-inch: 5.10 in length, 3.7 in OD, 2 in female NPT, 2 lb shipping weight. 3-inch: 6.82 in length, 8.5 lb. 4-inch: 8.05 in length, 15 lb. 6-inch: 10.35 in length, 27 lb.

8-inch: 12.16 in length, 95 lb. 10-inch: 14.84 in length, 185 lb. 12-inch: 17.40 in length, 270 lb.

2.07 ACCESSORIES

Flange gaskets. Adjustment tools. Grounding jumper straps. Installation instructions.

Appendix A - CSI Guide Specification (3 of 3)



Copy-ready guide specification language for engineers and project manuals.

PART 3 - EXECUTION

3.01 EXAMINATION

Verify meter size, installation location, service conditions, and accessibility.

3.02 INSTALLATION

Install on user side of water meter. Install before pressure reducing valves and booster pumps. Install immediately downstream of backflow preventer where practical. Provide ten pipe diameters of straight pipe upstream and downstream where practical. If space is limited, prioritize upstream straight pipe. Install with closed orifice facing upstream and open orifice facing downstream.

THREADED VALVES

Use PTFE tape or approved thread sealant. Do not apply sweat heat or soldering heat. Do not over-tighten.

FLANGED VALVES

Install gaskets at each flange. Align flanges before tightening bolts.

GROUNDING

Install grounding strap where metallic piping serves as an electrical grounding path. Grounding shall bypass valve body.

3.03 STARTUP

Slowly restore water service. Vent trapped air. Inspect for leaks. Verify downstream fixture operation.

3.04 FIELD CALIBRATION

Threaded valves: Use supplied adjustment tool. Approximately 22-23 clicks from full MINUS to full PLUS. Each click may reduce downstream pressure by approximately 1-2 psi. Flanged valves: Begin at approximately 30 percent setting. Increase in 10-20 percent increments. Determine highest acceptable setting under peak demand.

3.05 FIELD QUALITY CONTROL

Verify leak-free installation, flow direction, calibration operation, and grounding continuity.

3.06 OWNER TRAINING

Provide training covering operation, calibration, inspection, warranty requirements, and future adjustments.

3.07 CLOSEOUT

Submit product data, warranty documentation, startup reports, calibration records, and O&M manuals.



Engineering Better Water Systems

Smart Valve™ Engineering Design & Specification Guide CFT Engineering Services

- Product evaluation and application review
- Utility bill analysis and opportunity screening
- Engineering support and specification assistance
- Sizing guidance and contractor coordination
- Installation support and commissioning
- Measurement & verification support

CFT Energy Saving Solutions | 1013 Signal Road, Signal Mountain, TN 37377 | 615-756-9028 | tom@cftenergysavings.com