



The Flow Conditioning Device: Installation Point, Mechanism, and Meter Accuracy

Water Flow Innovations
LLC

Flow Conditioning Device (FCD)
waterflowinnovations.com

INSTALLATION POINT & MECHANISM

Installed Just After the Meter — Ahead of Every Validated Process System

The Flow Conditioning Device (FCD) installs between two pipe joints on the main water line immediately after your water meter — ahead of your facility's internal distribution to liquid cooling plant makeup, cooling tower and dry cooler supply, chilled water plant feed, and facility domestic demand. Each FCD is custom-built to the facility's exact specifications — pipe size, operating water pressure, and existing PRV configuration — and may include an integral check valve depending on the installation requirements. It requires no power and is installed by a licensed plumber or mechanical contractor with water off for approximately one hour.

Mechanically, the FCD creates a slight static back-pressure that extends back through the meter, reducing the air, gas, and turbulence that form during demand events and delivering a laminar-like flow profile through the measurement chamber. Municipal meters register volumetric displacement — entrained air and turbulent flow register as billable volume. Pressure loss through the device is under 0.8 psi across all flow conditions; downstream pressures, temperatures, and flow rates are effectively unchanged. Because the FCD sits just after the meter, it is outside compute operations and cooling plant control — a scheduled one-hour municipal shutdown with normal basin and storage buffer is the only impact. Complete technical documentation is provided to support your internal change control review.

DIAGNOSTIC CHECKLIST — SIX SIGNS YOUR METER IS OVER-READING

- ☐ **WUE above Green Grid targets**
WUE runs above The Green Grid benchmark targets despite cooling system efficiency work.
- ☐ **Intake exceeds cooling accounting**
Metered intake exceeds documented tower evaporation and liquid cooling volumes.
- ☐ **Costs beyond compute load growth**
Water costs increase more than compute load growth explains during peak workload periods.
- ☐ **Grant sustainability data above peers**
DOE or NSF grant sustainability reporting shows WUE above peer facility benchmarks.
- ☐ **Water per petaflop above cloud benchmarks**
AI training cluster water intensity per petaflop runs above published cloud provider benchmarks.
- ☐ **Water accepted as compute overhead**
Municipal water is treated as overhead proportional to compute load rather than a controlled input.

WHERE OVER-READING HITS THE OPERATION

- WUE & Published Metrics**
WUE is calculated from metered intake — over-reading directly inflates the metric your center publishes and is benchmarked on.
- Grant & Agency Reporting**
DOE and NSF facility sustainability data reference metered intake — correcting over-reading legitimately improves reported intensity.
- Water Balance Closure**
The gap between intake and evaporation-plus-blowdown accounting is frequently the over-read itself — correction closes the balance.
- Critical Cooling Unaffected**
Liquid cooling loops, chilled water delivery, and node temperatures are untouched — the FCD is passive and ahead of everything.

ENGINEERING Q&A

Q: Will the FCD affect liquid cooling performance, chilled water delivery, or node temperatures?

A: No. Pressure loss through the FCD is under 0.8 psi across all flow conditions, and it installs immediately after the meter, ahead of all cooling plant systems. Loop pressures, delivery temperatures, and compute node thermal conditions are effectively unchanged.

Q: How is installation handled without risking workloads?

A: The FCD installs in approximately one hour with municipal supply off — tower basins and storage provide normal buffer for a scheduled maintenance window. Cooling plants continue operating on their reserves; compute is unaffected.

Q: Why doesn't our water balance reconcile?

A: Makeup valve cycling and pump starts under variable compute load create repeated high-velocity demand events at the supply meter — generating air and turbulence billed as volume. The unexplained intake gap is frequently the over-read itself.

Q: Will this improve our reported WUE for grant and sustainability reporting?

A: Yes — legitimately. WUE is computed from metered intake, so correcting over-reading lowers reported WUE to its true value. Before-and-after bills document the change for DOE/NSF reporting and CDP disclosure without additional infrastructure.

Q: How quickly do savings appear?

A: The meter reads accurately immediately after installation. Savings appear on the next full water and sewer billing cycle — no ramp-up period. 90% of installed customers reach full return on investment in under 12 months.

ENGAGEMENT PROCESS — FOUR STEPS

From Analysis to Verified Bill Reduction

1

Free Savings Analysis

We review your water and sewer bills and facility demand profile — no cost, no obligation.

2

Documented Projection

You receive a written savings projection specific to your facility before any commitment.

3

FCD Installation

Licensed plumber or mechanical contractor installs immediately after the meter — water off approximately one hour.

4

Verified Bill Reduction

Before-and-after bill comparison verifies the reduction on your next billing cycles.

GUARANTEE & WARRANTY TERMS

6-Month Money-Back Guarantee

If you're not satisfied within 6 months of installation, the FCD purchase is fully refunded — no questions asked. Installation labor is non-refundable.

Lifetime Transferable Warranty

The FCD carries a lifetime warranty, transferable to the new building owner if the facility changes hands (a transfer fee applies).

DEVICE SPECIFICATIONS

Construction, Certification & Installation

Custom-built to each facility's specifications — pipe size, operating pressure, PRV configuration · 316L stainless steel construction; titanium and specialty alloys available by special order for medical and other specialized applications · Configuration may include an integral check valve per installation requirements · No power required · Under 0.8 psi pressure loss · Certifications: IAPMO, NSF/ANSI/CAN 61, KIWA, GMP, SQF · Installed by licensed plumber or mechanical contractor

Regulatory & Standards References: The Green Grid (WUE) · DOE/NSF Facility Reporting · CDP

FREE SAVINGS ESTIMATE

Instant estimate — takes 30 seconds, no contact info required.

waterflowinnovations.com/water-bill-savings-calculator

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CERTIFICATIONS

IAPMO NSF/ANSI/CAN 61 KIWA GMP SQF

316L Stainless Steel · Made in USA
Under 0.8 psi pressure loss
Lifetime Transferable Warranty