



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 cooling tower makeup headers, boiler feedwater and steam plant supply, chilled water plant makeup, and campus loop charging. 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 plant operating parameters, NPDES permit conditions, and connected building service commitments — no operational change is required. Complete technical documentation is provided to support your internal change control review.

DIAGNOSTIC CHECKLIST — SIX SIGNS YOUR METER IS OVER-READING

- ☐ **Water intensity per ton-hour above benchmarks**
Water intensity per ton-hour of cooling runs above IDEA and peer plant benchmarks.
- ☐ **Intake doesn't reconcile with tower calcs**
Metered intake exceeds what evaporation and blowdown calculations can account for.
- ☐ **Disproportionate peak-season increases**
Water costs climb during peak cooling season load swings beyond proportional makeup demand.
- ☐ **Campus sustainability metrics above peers**
University or campus water intensity reporting runs above peer institution benchmarks.
- ☐ **NPDES blowdown balance shows intake gaps**
Cooling tower blowdown permit water balances show unexplained intake-side gaps.
- ☐ **Water treated as thermal-output overhead**
Municipal water is accepted as overhead proportional to thermal output rather than a controlled input.

WHERE OVER-READING HITS THE OPERATION

- Cost per Ton-Hour & Plant Economics**
Inflated intake flows directly into cost per ton-hour and campus utility rates — billed on both the water and sewer side.
- NPDES & Blowdown Permit Balance**
Permit water balances built on metered intake carry the over-read as an unexplained gap — correcting the meter closes the balance.
- Campus & IDEA Benchmarking**
Campus sustainability reports and IDEA peer benchmarking reference metered intake — over-reading overstates true plant water intensity.
- Plant Operations & Engineering**
Makeup water accounting, cycles-of-concentration optimization, and efficiency projects start from a meter reading that includes volume that never arrived.

ENGINEERING Q&A

Q: Will the FCD affect chiller performance, tower basin levels, boiler feedwater, or building comfort?

A: No. Pressure loss through the FCD is under 0.8 psi across all flow conditions, and it installs ahead of plant distribution. Chiller operation, basin level control, feedwater delivery, and every connected building's service are effectively unchanged.

Q: Why doesn't our intake reconcile with evaporation and blowdown calculations?

A: Tower makeup valve cycling and seasonal load swings create repeated high-velocity demand events at the supply meter — generating air and turbulence billed as volume. The unexplained intake gap in your water balance is frequently the over-read itself.

Q: How does the FCD affect our NPDES blowdown permit documentation?

A: The permit water balance improves. With intake accurately metered, the intake-to-blowdown balance closes without unexplained gaps, strengthening permit documentation. Typically no permit modification is required — the FCD installs just after the meter; confirm with your compliance team.

Q: Can documented savings support campus sustainability and IDEA reporting?

A: Yes, as cost documentation. Before-and-after utility bills verify the corrected billing. Because the FCD corrects the meter reading rather than reducing water use, confirm with your sustainability team how to report it for campus sustainability reports, IDEA benchmarking submissions, and CDP disclosure.

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: IDEA (International District Energy Association) · EPA NPDES · 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