



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 RO trains and prefiltration feed, bottle rinse and washer lines, batching systems, and utility and cooling makeup. 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 FDA bottled water GMP scope and IBWA plant audit requirements — typically no quality documentation change or re-validation is required; confirm with your compliance team. Complete technical documentation is provided to support your internal change control review.

DIAGNOSTIC CHECKLIST — SIX SIGNS YOUR METER IS OVER-READING

- ☐ **Cost per case or per gallon above expectations**
Municipal water cost per case or finished gallon persistently exceeds plant expectations.
- ☐ **RO reject doesn't account for full input**
Metered input exceeds what RO production plus documented reject volume can account for.
- ☐ **Sewer bill tracks input but seems high**
Sewer charges follow the metered input up — even when actual drain volume hasn't changed.
- ☐ **Pressure fluctuations or air at the supply**
Observable pressure swings or air at the supply connection — the same entrained air registers as billable volume.
- ☐ **Costs rising faster than production**
Municipal water cost climbs faster than case production year over year.
- ☐ **Input water treated as fixed cost**
Water input is treated as fixed and uncontrollable rather than a managed cost.

WHERE OVER-READING HITS THE OPERATION

- Cost per Case & Plant Margin**
Inflated intake flows directly into cost per case — in an industry where water is the product, meter accuracy is margin.
- RO Water Balance Clarity**
The gap between metered input and RO output plus reject is often over-read volume — correcting the meter closes the balance.
- FDA & IBWA Documentation Unaffected**
FDA bottled water GMPs and IBWA audit documentation are untouched — the FCD sits just after the meter, ahead of all treatment and product water systems.
- Sewer & Discharge Charges**
Sewer charges calculated from metered input are inflated by over-reading — reject discharge reporting inherits the same inflation.

ENGINEERING Q&A

Q: Will the FCD affect RO feed pressure or the purification process?

A: No. Pressure loss through the FCD is under 0.8 psi across all flow conditions, and it installs ahead of your treatment train. RO feed pressure, prefiltration, and all downstream purification parameters are effectively unchanged — the device never contacts treated or product water.

Q: Why doesn't our metered input reconcile with RO output plus reject?

A: RO high-pressure pumps and batching demand create repeated high-velocity events at the supply meter — generating air and turbulence that register as billable volume. That unaccounted gap is frequently the over-read itself.

Q: Does installation require FDA or IBWA documentation changes?

A: No. The FCD installs immediately after the municipal meter, outside FDA bottled water GMP and IBWA plant audit scope. Technical documentation is provided for your quality system's change control records.

Q: Can documented savings support sustainability 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 CDP disclosure, SQF documentation, and customer scorecards.

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: FDA Bottled Water GMPs · IBWA · SQF · EPA